

NICOLA PEDRONI

PERSONAL DATA

Born in Cremona (Italy), 03-06-1981

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CURRENT ACADEMIC POSITION

April 1, 2017 – today

Associate professor at the Energy Department “Galileo Ferraris” of **Politecnico di Torino** (Torino, Italy). Scientific Disciplinary Areas: 09/C2 – Thermodynamics and Nuclear Engineering; ING-IND/19 - Nuclear power plants.

Research focus: Study and development of advanced mathematical tools and computational methods for the reliability, safety, risk, vulnerability and resilience analyses of complex, safety-critical engineering systems for energy production and distribution (e.g., industrial installations – such as nuclear systems – and critical infrastructures – such as power transmission networks), in presence of uncertainties.

EDUCATION AND ACADEMIC QUALIFICATIONS

March 2018

National (Italian) Academic Habilitation to be a Full Professor in the Scientific Disciplinary Area 09/C2 – Thermodynamics and Nuclear Engineering. The habilitation has been conferred by the **Italian Ministry of Education, University and Research** and has a validity of 6 years.

February 2017

National (French) Academic Qualification to be a Full Professor (Professeur des Universités) in the Scientific Disciplinary Sector (CNU) 61 – Engineering Informatics, Automatics and Signal Processing. The habilitation has been conferred by the Conseil National des Universités (CNU) - French National University Board and has a validity of 4 years.

February 04, 2016

National (French) Academic Habilitation to Direct the Research (HDR) in the Scientific Disciplinary Sector 61 – Engineering Informatics, Automatics and Signal Processing. This diploma is essential for applying to Full Professor positions in France. The habilitation has been conferred by the **University Grenoble Alpes (UGA) – National Polytechnic Institute of Grenoble**.

Thesis title: “Advanced methods for the risk, vulnerability and resilience assessment of safety-critical engineering components, systems and infrastructures, in the presence of uncertainties”.

Jury: Profs. Christophe Bérenguer (Université Grenoble Alpes-UGA), Antoine Grall (Université Technologie Troyes-UTT), Terje Aven (University of Stavanger-UIS), Bruno Sudret (Swiss Federal Institute of Technology in Zurich-ETHZ), Enrico Zio (CentraleSupélec and Politecnico di Milano).

February 2016

National (French) Academic Qualification to be an Assistant Professor (Maître des Conférences) in the Scientific Disciplinary Sector (CNU) 61 – Engineering Informatics, Automatics and Signal Processing. The habilitation has been conferred by the Conseil National des Universités (CNU) - French National University Board and has a validity of 4 years.

February 03, 2014

National (Italian) Academic Habilitation to be an Associate Professor in the Scientific Disciplinary Area 09/C2 – Thermodynamics and Nuclear Engineering. The habilitation has been conferred by the **Italian Ministry of Education, University and Research** and has a validity of 6 years.

March 01, 2010	<p>PhD in Radiation Science and Technology at the Politecnico di Milano (Milano, Italy), with first class honours. Thesis title: “Advanced Monte Carlo Simulation Methods and Neural Network Regression for the Reliability Analysis of Nuclear Passive Systems”. The work was carried out at the Laboratory of Signal and Risk Analysis (LASAR) of the Energy Engineering Department of the Politecnico di Milano (Milano, Italy).</p>
December 22, 2005	<p>(Second Level) Degree in Nuclear Engineering at the Politecnico di Milano (Milano, Italy), with the score of 110/110 cum laude. Thesis title: “Genetic Algorithms for Feature Selection in Nuclear Diagnostics”. The work was carried out at the Laboratory of Signal and Risk Analysis (LASAR) of the Department of Nuclear Engineering – CEntro Studi Nucleari Enrico Fermi (CESNEF) of the Politecnico di Milano (Milano, Italy).</p>
July 24, 2003	<p>(First Level) Degree in Energy Engineering at the Politecnico di Milano (Milano, Italy), with the score of 110/110 cum laude. Thesis title: “Comparison of ‘balance of plants’ for space applications of nuclear reactors”. The work was carried out at the Department of Nuclear Engineering – CEntro Studi Nucleari Enrico Fermi (CESNEF) of the Politecnico di Milano (Milano, Italy).</p>
July 22, 2000	<p>Graduation Diploma in Scientific Studies at the Liceo Scientifico “Gaspare Aselli” (Cremona, Italy), with the score of 100/100 cum laude.</p>
Post-graduation courses	
July 22-29, 2007	<p>Summer School “Summer Safety and Reliability Seminars (SSARS) 2007”, 1st Edition, Gdansk-Sopot, Poland.</p>
September 25-28, 2006	<p>Professional training course titled “Innovative techniques for the evaluation of the reliability and availability of industrial plants”, 9th Edition, 25-28 September 2006, held at the Department of Nuclear Engineering – CEntro Studi Nucleari Enrico Fermi (CESNEF) of the Politecnico di Milano (Milano, Italy).</p>

RESEARCH ACTIVITY (PREVIOUS ACADEMIC POSITIONS)

Abroad

January 1, 2016 – April 1, 2017	<p>Temporary Associate professor at the Electricité de France (EDF) Chair “System Science & Energetic Challenge” at University Paris Saclay-École CentraleSupélec (Gif-Sur-Yvette, France).</p>
March 1, 2013 – December 31, 2015	<p>Assistant professor at the Electricité de France (EDF) Chair “System Science & Energetic Challenge” at University Paris Saclay-École CentraleSupélec (Gif-Sur-Yvette, France).</p>
September – December 2012	<p>Visiting researcher at the Laboratoire Genie Industrielle (LGI) (Laboratory of Industrial Engineering) of the Ecole Centrale Paris (ECP) (Chatenay-Malabry, France).</p>
September 2008 – May 2009	<p>Visiting Ph. D. Student at the Department of Nuclear Science and Engineering of the Massachusetts Institute of Technology (MIT) (Cambridge, Massachusetts - USA), under the supervision of Prof. G. E. Apostolakis. Title of the research project: “Simulation methods for uncertainty and sensitivity analysis of physical-mathematical models of safety-critical systems” (the visit has been supported by the Progetto Roberto Rocca Fellowship).</p>

Italy

June 01, 2010 – February 28, 2013	<p>Assistant professor at the Laboratory of Signal and Risk Analysis (LASAR) of the Energy Engineering Department of the Politecnico di Milano (Milano, Italy). Scientific Disciplinary Area: ING-IND/19 - Nuclear power plants. Title of the research program: “Development of advanced methods and models for the safety, reliability, maintenance, diagnostics and prognostics of nuclear and industrial components and systems”.</p>
January 16 – May 31, 2010	<p>Research grant (post-doc) at the Laboratory of Signal and Risk Analysis (LASAR) of the Energy Engineering Department of the Politecnico di Milano (Milano, Italy). Title of the research program: “Study and development of advanced computational methods for the reliability assessment, diagnostics and prognostics of industrial components/systems/plants in presence of uncertainties”.</p>
March 16 – December 31, 2006	<p>Research grant at the Laboratory of Signal and Risk Analysis (LASAR) of the Department of Nuclear Engineering – Centro Studi Nucleari Enrico Fermi (CESNEF) of the Politecnico di Milano (Milano, Italy). Title of the research program: “Study and development of feature selection methods for soft-computing models with applications to safety”.</p>

RESEARCH INTERESTS

Study and development of advanced computational methods for the reliability, safety, risk, vulnerability and resilience analyses of complex, safety-critical engineering systems (e.g., industrial installations – such as nuclear systems – and critical infrastructures – such as power transmission networks), in the presence of aleatory and epistemic uncertainties. In particular:

- advanced Monte Carlo simulation methods for the uncertainty and sensitivity analysis of physical-mathematical models of complex engineering systems (with the particular objective of efficiently estimating small failure probabilities of highly reliable systems);
- advanced computational methods for the Integrated Deterministic and Probabilistic Safety Assessment (IDPSA) of complex, dynamic engineering systems;
- theories and methods for modelling and simulating the behaviour of power transmission networks and interdependent critical infrastructures in general, with the particular objective of performing risk, vulnerability and resilience analyses (for example, complex network theory, graph theory, power flow models);
- theories and methods for the quantitative representation and propagation of aleatory and epistemic uncertainties through physical-mathematical models (e.g., Probability, Evidence, Fuzzy and Possibility Theories);
- soft-computing techniques for empirical regression modelling (e.g., classical feed-forward and dynamic recurrent Artificial Neural Networks), with the main objective of reducing the computational burden associated to the risk analysis of complex engineering systems modelled by long-running computer codes;
- heuristic techniques for solving nonlinear, constrained optimization problems (e.g., Genetic Algorithms).

ORGANIZATIONAL ACTIVITIES AT THE INTERNATIONAL LEVEL

Editor for International Journals

2021-	<ul style="list-style-type: none"> • Topic Editor for the International Journal of <i>Energies</i>.
2016-today	<ul style="list-style-type: none"> • Member of the Editorial Board (Associate Editor) of the International <i>Journal of Risk and Reliability, Proceedings of the Institution of Mechanical Engineers, Part O</i>, May 2016-today.
2015-today	<ul style="list-style-type: none"> • Member of the Editorial Board of the International Journals <i>ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering</i> and <i>Part B: Mechanical Engineering</i>.

2014-2015

- Guest Co-Editor for the International Journal *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering*. Special Issue on “Advanced Monte Carlo Methods and Applications in Reliability and Risk Analyses”.

Coordinator of technical-scientific areas at international conferences

2020

- Co-coordinator of the technical-scientific area “Dynamic Reliability/Risk Assessment” at the 2020 30th European Safety and Reliability (ESREL) Conference and the 15th Probabilistic Safety Assessment and Management (PSAM) Conference, November 1–6, 2020, Venice, Italy.

2019

- Co-organizer of the Mini-Symposium “Surrogate models: benchmark problems and solutions” at the 3rd International Conference on Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP) 2019, 24-26 June 2019, Crete, Greece.

2018

- Coordinator of the technical-scientific area “Risk Assessment Methods” at the 14th Probabilistic Safety Assessment & Management 2018 (PSAM 2018) Conference, 16-21 September 2018, UCLA Meyer and Renee Luskin Conference Center, Los Angeles, CA, USA.

2012

- Coordinator of the technical-scientific area “Stochastic Modeling and Simulation Techniques” at the joint 2012 International Conference on Probabilistic Safety Assessment and Management (PSAM 11) & European Safety and RELiability Conference (ESREL 2012), 25-29 June 2012, Helsinki, Finland.

Member of Technical Program Committees of international conferences

2022

- Member of the Technical Programme Committee (TPC) of the 4th International Conference on Nuclear Power Plants: Structures, Risk, Control & Decommissioning NUPP 2022, 28-29 MARCH 2022: London Croydon, UK.

2020

- Member of the Technical Programme Committee (TPC) of the 2020 30th European Safety and Reliability (ESREL) Conference and the 15th Probabilistic Safety Assessment and Management (PSAM) Conference, November 1–6, 2020, Venice, Italy.

2019

- Member of the Technical Programme Committee (TPC) of the 4th International Conference on System Reliability and Safety 2017 (ICSRS 2017), December 20-22, 2017, Milan, Italy.

2019

- Member of the Technical Programme Committee (TPC) of the 2019 European Safety and RELiability Conference (ESREL 2019), 22 - 26 September 2019, Hannover, Germany.

2019

- Member of the Technical Programme Committee (TPC) of the International Conference on Information and Digital Technologies (IDT) 2019, June 25th - 27th 2019, Zilina, Slovak Republic.

2018

- Member of the Technical Programme Committee (TPC) of the 14th Probabilistic Safety Assessment & Management 2018 (PSAM 2018) Conference, 16-21 September 2018, UCLA Meyer and Renee Luskin Conference Center, Los Angeles, CA, USA.

2017

- Member of the Technical Programme Committee (TPC) of the 2nd International Conference on System Reliability and Safety 2017 (ICSRS 2017), December 20-22, 2017, Milan, Italy.

2017

- Member of the Technical Programme Committee (TPC) of the 2017 European Safety and RELiability Conference (ESREL 2017), 18-22 June 2017, Portoroz, Slovenia.

2017

- Member of the Technical Programme Committee (TPC) of the International Conference on Information and Digital Technologies (IDT) 2017, 5-7 July 2017, Zilina, Slovak Republic.

2016

- Member of the Technical Programme Committee (TPC) of the International Conference on Information and Digital Technologies (IDT) 2016, 5-7 July 2016, Rzeszów, Poland.

2015

- Member of the Technical Programme Committee (TPC) of the 1st International Conference on Information and Digital Technologies (IDT) 2015, 7-9 July 2015, Zilina, Slovak Republic.

- 2015 • Member of the Technical Programme Committee (TPC) of the 2015 European Safety and RELiability Conference (ESREL 2015), 7-10 September 2015, at ETH, the Swiss Federal Institute of Technology, Zürich, Switzerland.
- 2014 • Member of the Technical Programme Committee (TPC) of the 10th International Conference on Digital Technologies (DT) 2014 - International Workshop on Reliability Technologies, 9-11 July 2014, Zilina, Slovak Republic.
- 2012 • Member of the Technical Programme Committee (TPC) of the joint 2012 International Conference on Probabilistic Safety Assessment and Management (PSAM 11) & European Safety and RELiability Conference (ESREL 2012), 25-29 June 2012, Helsinki, Finland.

Chairman of sessions at international conferences

- 2019 • Chairman of two sessions titles “Surrogate models: benchmark problems and solutions” at the 3rd International Conference on Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP) 2019, 24-26 June 2019, Crete, Greece.
- 2015 • Chairman of the session titled “Simulation frameworks for Reliability, Availability, Maintenance and Safety (RAMS) I” at the 2015 European Safety and RELiability Conference (ESREL 2015), 7-10 September 2015, at ETH, the Swiss Federal Institute of Technology, Zürich, Switzerland.
- 2015 • Chairman of the session titled “Reliability and risk: automating analyses” at the 2015 European Safety and RELiability Conference (ESREL 2015), 7-10 September 2015, at ETH, the Swiss Federal Institute of Technology, Zürich, Switzerland.
- 2012 • Chairman of the session titled “Stochastic simulation for reliability and risk analysis” at the joint 2012 International Conference on Probabilistic Safety Assessment and Management (PSAM 11) & European Safety and RELiability Conference (ESREL 2012), 25-29 June 2012, Helsinki, Finland.
- 2010 • Co-chairman of the session titled “Advanced Reactors 16-1: Passive system reliability I” during the “10th International Probabilistic Safety Assessment & Management (PSAM) Conference”, Seattle, Washington (USA), 7-11 June 2010.

Referee for international journals (number of papers reviewed)

- Since 2019 • Operations Research Perspectives (2)
- Since 2018 • Quality and Reliability Engineering International (2)
- Since 2018 • Advances in Mechanical Engineering (2)
- Since 2018 • Journal of Earthquake Engineering (2)
- Since 2017 • Computers & Industrial Engineering (3)
- Since 2017 • Annals of Nuclear Energy (3)
- Since 2017 • IEEE Transactions on Power Systems (2)
- Since 2016 • Journal of Engineering Design (1)
- Since 2016 • Applied Soft Computing (2)
- Since 2016 • Risk Analysis, an International Journal (3)
- Since 2015 • Mechanical Systems and Signal Processing (3)
- Since 2015 • International Journal of Reliability and Safety (1)
- Since 2014 • Applied Mathematical Modelling (2)
- Since 2014 • ASCE-ASME Risk and Uncertainty in Engineering Systems Part B: Mechanical Engineering (2)
- Since 2014 • Journal of Aerospace Information Systems (2)
- Since 2014 • ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering (14)
- Since 2014 • IEEE Systems Journal (5)
- Since 2013 • International Journal of Uncertainty, Fuzziness and Knowledge-based Systems (1)
- Since 2013 • IEEE Transactions on Reliability (2)
- Since 2012 • Proceedings of the Institution of Mechanical Engineers, Part O, Journal of Risk and Reliability (26)
- Since 2012 • Computers and Structures (1)
- Since 2012 • Aerospace Science and Technology (2)

Since 2010	• Statistics and Computing (2)
Since 2009	• Nuclear Engineering and Technology (2)
Since 2009	• Science and Technology of Nuclear Installations (2)
Since 2009	• Nuclear Engineering and Design (2)
Since 2008	• Reliability Engineering and System Safety (18)
Since 2006	• IEEE Transactions on Evolutionary Computation (1)

Referee for international conferences

2020	• Review of about 20 papers submitted for publication in the Proceedings of the 2020 30th European Safety and Reliability (ESREL) Conference and the 15th Probabilistic Safety Assessment and Management (PSAM) Conference, November 1–6, 2020, Venice, Italy.
2019	• Review of about 40 abstracts and 10 papers submitted for publication in the Proceedings of the 2019 European Safety and RELiability Conference (ESREL 2019), 22 - 26 September 2019, Hannover, Germany.
2018	• Review of about 20 papers submitted for publication in the Proceedings of the 14th Probabilistic Safety Assessment & Management 2018 (PSAM 2018) Conference, 16-21 September 2018, UCLA Meyer and Renee Luskin Conference Center, Los Angeles, CA, USA.
2018	• Invited to review three papers submitted for publication in the Proceedings of the 2018 European Safety and RELiability Conference (ESREL 2018), 17-21 June 2018, at the Norwegian University of Science and Technology (NTNU), Trondheim, Norway.
2017	• Invited to review three papers submitted for publication in the Proceedings of the 2nd International Conference on System Reliability and Safety 2017 (ICSRS 2017), December 20-22, 2017, Milan, Italy.
2015	• Invited to review two papers submitted for publication in the Proceedings of the 2015 European Safety and RELiability Conference (ESREL 2015), 7-10 September 2015, at ETH, the Swiss Federal Institute of Technology, Zürich, Switzerland.
2015	• Invited to review two papers submitted for publication in the Proceedings of the 1st International Conference on Information and Digital Technologies (IDT) 2015, 7-9 July 2015, Zilina, Slovak Republic.
2012	• Invited to review seven papers submitted for publication in the <i>Proceedings of the joint 2012 International Conference on Probabilistic Safety Assessment and Management (PSAM 11) & European Safety and RELiability Conference (ESREL 2012)</i> , 25-29 June 2012, Helsinki, Finland.
2011	• Invited to review one paper submitted for publication in the <i>Proceedings of the European Safety and RELiability (ESREL) 2011 Conference</i> , 18-23 September 2011, Troyes, France.
2010	• Invited to review several abstracts submitted for publication in the <i>Proceedings of the Tenth International Probabilistic Safety Assessment and Management (PSAM 10) Conference</i> , 7-11 June 2010, Seattle, Washington (USA).
2008	• Invited to review one paper submitted for publication in the <i>Proceedings of the 8th International FLINS Conference on Computational Intelligence in Decision and Control</i> , 21-24 September 2008, Madrid, Spain.
2008	• Invited to review several abstracts submitted for publication in the <i>Proceedings of the Ninth International Probabilistic Safety Assessment and Management (PSAM 9) Conference</i> , 18-23 May 2008, Hong Kong, China.

Organization of International Master/PhD courses

October 2016	• Member of the organizing committee of the 5 th PhD School on “Vulnerability, risk and resilience of complex system and critical infrastructures”, organized by École CentraleSupélec (Chatenay-Malabry, France), Politecnico di Milano (Milano, Italy), Beihang University (Beijing, China) and the T.I.M.E. Association (Chatenay-Malabry, France), 16-22 October 2016, at Beihang University (Beijing, China).
September 2015	• Member of the organizing committee of the 4 th PhD School on “Vulnerability, risk and resilience of complex system and critical infrastructures”, organized by École CentraleSupélec (Chatenay-Malabry, France), Politecnico di Milano

(Milano, Italy) and the T.I.M.E. Association (Chatenay-Malabry, France), 14-18 September 2015, at CentraleSupélec, Chatenay-Malabry, France.

Thesis Jury Member

2021	<ul style="list-style-type: none">Member of one graduation committee for the students of the Second Level Master Course “Energy and Nuclear Engineering” at Politecnico di Torino (Torino, Italy), 25 March 2021.
2020	<ul style="list-style-type: none">Member of one graduation committee for the students of the Second Level Master Course “Energy and Nuclear Engineering” at Politecnico di Torino (Torino, Italy), 17 July 2020.
2019	<ul style="list-style-type: none">Member and (external) examiner/reviewer in the Committee of the PhD defense of Muxia SUN, “The Reliability Assessment and Optimization of Arbitrary-State Monotone Systems with Epistemic Uncertainty”, thesis of the University Paris Saclay-Ecole CentraleSupélec (Gif-Sur-Yvette, France), defended on 3 July 2019.
2019	<ul style="list-style-type: none">Member and (external) examiner/reviewer in the Committee of the PhD defense of Kjartan Bjørnsen, “Contributions to improved risk assessments by highlighting the strength of knowledge concept”, thesis of the University of Stavanger (Stavanger, Norway), defended on 12 April 2019.
2018	<ul style="list-style-type: none">Member and (external) examiner/reviewer in the Committee of the PhD defense of Roberto ROCCHETTA, “Robust Computational Frameworks for Power Grid Reliability, Vulnerability and Resilience Analysis”, thesis of the University of Liverpool, Institute of Risk and Uncertainty, School of Engineering (Liverpool, UK), defended on 18 December 2018.
2018	<ul style="list-style-type: none">Member in the Committee of the PhD defense of Zhiyi WANG, “Construction of fragility curves by means of advanced statistical methods”, thesis of University Paris Saclay-Ecole CentraleSupélec (Gif-Sur-Yvette, France), defended on 27 November 2018, supervisors: Nicola PEDRONI, Enrico ZIO, Irmela ZENTNER.
2018	<ul style="list-style-type: none">Member of (three) graduation committees for the students of the Second Level Master Course “Energy and Nuclear Engineering” at Politecnico di Torino (Torino, Italy), 23 July 2018.
2017	<ul style="list-style-type: none">Internal member in the Committee of a PhD defense at the Energy Department (DENERG) of the Politecnico di Torino (Torino, Italy), 26 July 2017.
2017	<ul style="list-style-type: none">Internal member in the Committee of a PhD defense at the Energy Department (DENERG) of the Politecnico di Torino (Torino, Italy), 25 July 2017.
2017	<ul style="list-style-type: none">Member in the Committee of the PhD defense of Pietro Turati, “Adaptive simulation methods for risk assessment of complex systems”, thesis of University Paris Saclay-Ecole CentraleSupélec (Gif-Sur-Yvette, France), defended on 16 May 2017, supervisors: Nicola PEDRONI, Enrico ZIO.
2016-2017	<ul style="list-style-type: none">Member of the evaluation committee of the students of the International Master in Nuclear Energy (MNE), Specialty Operations, 2016-2017. The MNE is run by a consortium of several academic institutions (Université Paris-Sud 11, ParisTech, Ecole Centrale Paris and Supélec and CEA-INSTN) with the support of several industrial establishments (EDF, Areva, GDF SUEZ), CEA-INSTN (Saclay, France).
2015-2016	<ul style="list-style-type: none">Member of the evaluation committee of the students of the International Master in Nuclear Energy (MNE), Specialty Operations, 2015-2016. The MNE is run by a consortium of several academic institutions (Université Paris-Sud 11, ParisTech, Ecole Centrale Paris and Supélec and CEA-INSTN) with the support of several industrial establishments (EDF, Areva, GDF SUEZ), CEA-INSTN (Saclay, France).
Other (administrative) activities	
2019-today	<ul style="list-style-type: none">Member of the Committee for the redaction of the Strategic Plan 2019-2022 of the Department of Energy (Dipartimento Energia “Galileo Ferraris”) of the Politecnico di Torino (Torino, Italy).
2017-today	<ul style="list-style-type: none">Co-Chair of the European Safety and Reliability Association (ESRA) Technical Committee (TC) on “Simulation for Safety and Reliability Analysis”.
2015-2017	<ul style="list-style-type: none">Member of the Board of Laboratory of Laboratoire Genie Industriel (LGI)

2015	<p>(Laboratory of Industrial Engineering), CentraleSupélec (Chatenay-Malabry, France).</p> <ul style="list-style-type: none"> Member of the evaluation committee of the exam projects of the course “Introduction to complex systems” (by Prof. E. Zio) of the Master “Genie Industriel (GI)”, Master Recherche “Optimisation des Systèmes Industriels et Logistiques (OSIL)” and Master Recherche “Modélisation et Management de la Conception” (MoMaC), held at Ecole Centrale Paris (ECP), Chatenay-Malabry, France, January 2015-March 2015.
2013	<ul style="list-style-type: none"> Member of the evaluation committee of the exam projects of the course “Risk Management” (by Prof. E. Zio and Prof. M. Bouissou) of the Master “Genie Industriel (GI)”, held at Ecole Centrale Paris (ECP), Chatenay-Malabry, France, 2013.

PARTICIPATION TO CONTRACTUAL WORKS AND PROJECTS

October 1, 2019 – September 30, 2023	<ul style="list-style-type: none"> Researcher within the team of the Politecnico di Torino for the H2020 Euratom Research Programme “SAMOSAFER - Severe Accident MOdeling and Safety Assessment for Fluid-fuel Energy Reactors” (Program: H2020-Euratom-1.1. - Support safe operation of nuclear systems; Topic: NFRP-2018-2 - Model development and safety assessments for Generation IV reactors), Grant agreement ID: 847527.
January 2015 – December 2015	<ul style="list-style-type: none"> Research collaborator within the project “SINAPS@ - Earthquake and Nuclear Facilities: Ensuring and Sustaining Safety” (€ 12.5 million), partly funded by the French National Agency for Research and coordinated by CEA with the following partners: EDF, Ecole Normale Supérieure de Cachan, Ecole Centrale Paris, the Institute for Radiological Protection and Nuclear Safety, Laboratory Soil-Solids-Structures and Risks (Institut Polytechnique de Grenoble), Ecole Centrale de Nantes, EGIS – industry, AREVA, ISTERre, IFSTTAR and CEREMA.
January 1, 2010 – December 2012	<ul style="list-style-type: none"> Researcher within the team of the Politecnico di Milano for the (three-year) contract with Electricite’ de France (EdF)-Research and Development (R&D) department (France) titled “Advanced computational methods for modelling the mechanisms of degradation in equipments of electricity production plants and uncertainty modelling and propagation” (40000EUR/year, Co-operation contract no. 5910059554: January 2010-December 2012).
January 1, 2010 – October 31, 2012	<ul style="list-style-type: none"> Researcher within the team of the Politecnico di Milano for the contract with the Fondation Pour Une Culture De Sécurité Industrielle (Toulouse, France) titled “Quantitative methods of uncertainty representation and modelling in risk analysis for decision-making practice” (100000EUR, Co-operation contract no. AO-2008: September 2009-October 2012).

TEACHING ACTIVITY

Responsibility for the organization of graduation courses

(Lectures = 299h; Exercise sessions = 162h; Exams = 90h)

2020-2021	<ul style="list-style-type: none"> Responsible of the organization and activity of the (elective) course “Safety of Energy Plants” (60 hours) of the First Level graduation course in Energy Engineering, Politecnico di Torino (Torino, Italy). The activity has entailed 32h lectures, 10h exercise sessions and 12h exam.
2020-2021	<ul style="list-style-type: none"> Responsible of the organization and activity of the course “Monte Carlo methods, safety and risk analysis – Part B” (50 hours) of the Second Level graduation courses in Energy and Nuclear Engineering, Politecnico di Torino (Torino, Italy). The activity has entailed 26h lectures, 18h exercise sessions and 12h exam.
2019-2020	<ul style="list-style-type: none"> Responsible of the organization and activity of the (elective) course “Safety of Energy Plants” (60 hours) of the First Level graduation course in Energy Engineering, Politecnico di Torino (Torino, Italy). The activity has entailed 32h lectures, 21h exercise sessions and 12h exam.

2019-2020	<ul style="list-style-type: none"> Responsible of the organization and activity of the course “Monte Carlo methods, safety and risk analysis – Part B” (50 hours) of the Second Level graduation courses in Energy and Nuclear Engineering and Chemical and Sustainable Processes Engineering, Politecnico di Torino (Torino, Italy). The activity has entailed 17h lectures, 18h exercise sessions and 12h exam.
September-December 2019	<ul style="list-style-type: none"> Co-responsible of the organization and activity of the course “Nuclear Thermohydraulics” (42 hours) of the international Master in “Nuclear Energy” run by a consortium of several academic institutions (Université Paris-Sud 11, ParisTech, Ecole Centrale Paris and Supélec and CEA-INSTN) with the support of several industrial establishments (EDF, Areva, GDF SUEZ), CEA-INSTN (Saclay, France). The activity has entailed the organization of 4 (three-hour) lectures, 2 (three-hour) exercise sessions and 1 (three-hour) mid-term exam.
2018-2019	<ul style="list-style-type: none"> Responsible of the organization and activity of the course “Optimal use and safety of energy plants” (120 hours) of the First Level graduation course in Energy Engineering, Politecnico di Torino (Torino, Italy). The activity has entailed 60h lectures, 20h exercise sessions and 12h exam.
September-December 2018	<ul style="list-style-type: none"> Co-responsible of the organization and activity of the course “Nuclear Thermohydraulics” (42 hours) of the international Master in “Nuclear Energy” run by a consortium of several academic institutions (Université Paris-Sud 11, ParisTech, Ecole Centrale Paris and Supélec and CEA-INSTN) with the support of several industrial establishments (EDF, Areva, GDF SUEZ), CEA-INSTN (Saclay, France). The activity has entailed the organization of 4 (three-hour) lectures, 2 (three-hour) exercise sessions and 1 (three-hour) mid-term exam.
2017-2018	<ul style="list-style-type: none"> Responsible of the organization and activity of the course “Optimal use and safety of energy plants” (120 hours) of the First Level graduation course in Energy Engineering, Politecnico di Torino (Torino, Italy). The activity has entailed 60h lectures, 20h exercise sessions and 12h exam.
September-December 2017	<ul style="list-style-type: none"> Co-responsible of the organization and activity of the course “Nuclear Thermohydraulics” (42 hours) of the international Master in “Nuclear Energy” run by a consortium of several academic institutions (Université Paris-Sud 11, ParisTech, Ecole Centrale Paris and Supélec and CEA-INSTN) with the support of several industrial establishments (EDF, Areva, GDF SUEZ), CEA-INSTN (Saclay, France). The activity has entailed the organization of 4 (three-hour) lectures, 2 (three-hour) exercise sessions and 1 (three-hour) mid-term exam.
September-December 2016	<ul style="list-style-type: none"> Co-responsible of the organization and activity of the course “Nuclear Thermohydraulics” (45 hours) of the international Master in “Nuclear Energy” run by a consortium of several academic institutions (Université Paris-Sud 11, ParisTech, Ecole Centrale Paris and Supélec and CEA-INSTN) with the support of several industrial establishments (EDF, Areva, GDF SUEZ), CEA-INSTN (Saclay, France). The activity has entailed the organization of 6 (three-hour) lectures, 3 (three-hour) exercise sessions and 1 (three-hour) mid-term exam.
January-March 2016	<ul style="list-style-type: none"> Co-responsible of the organization and activity of the course “Managing Uncertainty For Reliability Optimization - Maîtrise Des Incertitudes Pour l’Optimisation De La Fiabilité” (24 hours) of the Master in Industrial Engineering held at University Paris Saclay-Ecole CentraleSupélec, Chatenay-Malabry, France. The activity has entailed the organization of 3 (three-hour) lectures and 1 project exam.
September-December 2015	<ul style="list-style-type: none"> Co-responsible of the organization and activity of the course “Nuclear Thermohydraulics” (45 hours) of the international Master in “Nuclear Energy” run by a consortium of several academic institutions (Université Paris-Sud 11, ParisTech, Ecole Centrale Paris and Supélec and CEA-INSTN) with the support of several industrial establishments (EDF, Areva, GDF SUEZ), CEA-INSTN (Saclay, France). The activity has entailed the organization of 5 (three-hour) lectures, 3 (three-hour) exercise sessions and 1 (three-hour) mid-term exam.
November 2014-January 2015	<ul style="list-style-type: none"> Co-responsible of the organization and activity of the course “Managing Uncertainty For Reliability Optimization - Maîtrise Des Incertitudes Pour l’Optimisation De La Fiabilité” (24 hours) of the Master Recherche “Optimisation des Systèmes Industriels et Logistiques (OSIL)” held at Ecole Centrale Paris (ECP), Chatenay-Malabry, France. The activity has entailed the organization of 3 (three-hour) lectures and 1 project exam.

- September-December 2014**
 - Co-responsible of the organization and activity of the course “Nuclear Thermohydraulics” (45 hours) of the international Master in “Nuclear Energy” run by a consortium of several academic institutions (Université Paris-Sud 11, ParisTech, Ecole Centrale Paris and Supélec and CEA-INSTN) with the support of several industrial establishments (EDF, Areva, GDF SUEZ), CEA-INSTN (Saclay, France). The activity has entailed the organization of 4 (three-hour) lectures, 3 (three-hour) exercise sessions and 1 (three-hour) mid-term exam.
- September- December 2013**
 - Co-responsible of the organization and activity of the course “Nuclear Thermohydraulics” (45 hours) of the international Master in “Nuclear Energy” run by a consortium of several academic institutions (Université Paris-Sud 11, ParisTech, Ecole Centrale Paris and Supélec and CEA-INSTN) with the support of several industrial establishments (EDF, Areva, GDF SUEZ), CEA-INSTN (Saclay, France). The activity has entailed the organization of 4 (three-hour) lectures, 3 (three-hour) exercise sessions and 1 (three-hour) mid-term exam.
- September- December 2012**
 - Co-responsible of the organization and activity of the course “Nuclear Thermohydraulics” (45 hours) of the international Master in “Nuclear Energy” run by a consortium of several academic institutions (Université Paris-Sud 11, ParisTech, Ecole Centrale Paris and Supélec and CEA-INSTN) with the support of several industrial establishments (EDF, Areva, GDF SUEZ), CEA-INSTN (Saclay, France). The activity has entailed the organization of 5 (three-hour) lectures, 4 (three-hour) exercise sessions and 1 (three-hour) mid-term exam.

Lectures held during professional training courses

(Lectures = 12hrs; Exercise sessions = 12hrs; Tutorials = 0hrs; Exams = 0hrs)

- September 28, 2011**
 - Four-hour exercise session titled “Genetic Algorithms optimization”, held during the Professional Training Course “Advanced methods for the reliability and availability analyses, safety, maintenance, diagnostics and prognostics of industrial systems and plants”, 14th Edition, 26-29 September 2011, Politecnico di Milano (Milano, Italy).
- September 27, 2011**
 - Two-hour lecture titled “Advanced methods of Monte Carlo simulation for the estimation of small failure probabilities”, held during the Professional Training Course “Advanced methods for the reliability and availability analyses, safety, maintenance, diagnostics and prognostics of industrial systems and plants”, 14th Edition, 26-29 September 2011, Politecnico di Milano (Milano, Italy).
- June 16, 2011**
 - Eight-hour exercise session titled “Reliability and Availability of Simple Systems” held during the Professional Training Course “Reliability, Availability and Maintainability with Application in the Development Phases for Oil & Gas Upstream Projects”, 13-17 June 2011, ENI Corporate University, Milano (Italy).
- September 23, 2010**
 - Four-hour lecture titled “Genetic Algorithms with application to the optimization of system redundancy and maintenance”, held during the Professional Training Course “Advanced methods for the reliability and availability analyses, safety, maintenance, diagnostics and prognostics of industrial systems and plants”, 13th Edition, 20-23 September 2010, Politecnico di Milano (Milano, Italy).
- September 21, 2010**
 - Two-hour lecture titled “Advanced Monte Carlo Simulation Methods”, held during the Professional Training Course “Advanced methods for the reliability and availability analyses, safety, maintenance, diagnostics and prognostics of industrial systems and plants”, 13th Edition, 20-23 September 2010, Politecnico di Milano (Milano, Italy).
- September 23, 2009**
 - Two-hour lecture titled “Advanced Monte Carlo Simulation Methods”, held during the Professional Training Course “Innovative techniques for the evaluation of the reliability, availability, maintenance and diagnostics of industrial systems and plants”, 12th Edition, 21-24 September 2009, Politecnico di Milano (Milano, Italy).
- September 21, 2009**
 - Two-hour lecture titled “Recurrent Neural Networks”, held during the Professional Training Course “Innovative techniques for the evaluation of the reliability, availability, maintenance and diagnostics of industrial systems and plants”, 12th Edition, 21-24 September 2009, Politecnico di Milano (Milano, Italy).

September 25, 2007

- Two-hour lecture titled “Recurrent Neural Networks”, held during the Professional Training Course “Innovative techniques for the evaluation of the reliability and availability of industrial plants”, 10th Edition, 24-27 September 2007, Politecnico di Milano (Milano, Italy).

Lectures held during Ph.D. courses

(Lectures = 62hrs; Exercise sessions = 0hrs; Tutorials = 9hrs; Exams = 0hrs)

Courses of Italian Ph.D. Schools

March 2021

- Two-hour lecture titled “Basics of reduced-order modelling and metamodeling for safety-related applications”, held during the Course “System-level modeling of nuclear plants” (20h) offered by the “Scuola di Dottorato (ScuDo)” of the Politecnico di Torino, March 2021, Politecnico di Torino (Torino, Italy).

December 20, 2016

- Three-hour lecture titled “Markov Chain Monte Carlo for model and parameter identification”, held during the Multidisciplinary course “Monte Carlo simulation methods: theory and applications to stochastic and uncertain systems, structures and components” offered by the “Scuola di Dottorato di Ricerca” of the Politecnico di Milano, November-December 2016, Politecnico di Milano (Milano, Italy).

December 4, 2015

- Three-hour lecture titled “Markov Chain Monte Carlo for model and parameter identification”, held during the Multidisciplinary course “Monte Carlo simulation methods: theory and applications to stochastic and uncertain systems, structures and components” offered by the “Scuola di Dottorato di Ricerca” of the Politecnico di Milano, November-December 2015, Politecnico di Milano (Milano, Italy).

December 3, 2015

- Three-hour lecture titled “Efficient methods of sampling uncertain variables: Subset Simulation and Line Sampling”, held during the Multidisciplinary course “Monte Carlo simulation methods: theory and applications to stochastic and uncertain systems, structures and components” offered by the “Scuola di Dottorato di Ricerca” of the Politecnico di Milano, November-December 2015, Politecnico di Milano (Milano, Italy).

January 23, 2014

- Four-hour lecture titled “Advanced Monte Carlo simulation methods: Markov Chain Monte Carlo, Subset Sampling, Line Sampling, and applications to reliability analysis”, held during the Multidisciplinary course “Monte Carlo Simulation Methods for the Quantitative Analysis of Stochastic and Uncertain Systems” offered by the “Scuola di Dottorato di Ricerca” of the Politecnico di Milano, 5th Edition, January-February 2014, Politecnico di Milano (Milano, Italy).

October 19, 2012

- Four-hour lecture titled “Efficient Methods of Sampling Uncertain Variables: Subset and Line Sampling”, held during the Multidisciplinary course “Monte Carlo Simulation Methods for the Quantitative Analysis of Stochastic and Uncertain Systems” offered by the “Scuola di Dottorato di Ricerca” of the Politecnico di Milano, 4th Edition, September-October 2012, Politecnico di Milano (Milano, Italy).

October 26, 2011

- Two-hour lecture titled “Markov Chain Monte Carlo for model and parameter identification”, held during the Multidisciplinary course “Monte Carlo Simulation Methods for the Quantitative Analysis of Stochastic and Uncertain Systems” offered by the “Scuola di Dottorato di Ricerca” of the Politecnico di Milano, 3rd Edition, September 15-October 28 2011, Politecnico di Milano (Milano, Italy).

October 19, 2011

- Four-hour lecture titled “Efficient Methods of Sampling Uncertain Variables: Subset and Line Sampling”, held during the Multidisciplinary course “Monte Carlo Simulation Methods for the Quantitative Analysis of Stochastic and Uncertain Systems” offered by the “Scuola di Dottorato di Ricerca” of the Politecnico di Milano, 3rd Edition, September 15-October 28 2011, Politecnico di Milano (Milano, Italy).

October 20, 2010

- Two-hour lecture titled “Markov Chain Monte Carlo for model and parameter identification”, held during the Multidisciplinary course “Monte Carlo Simulation Methods for the Quantitative Analysis of Stochastic and Uncertain Systems” offered by the “Scuola di Dottorato di Ricerca” of the Politecnico di Milano, 2nd Edition, September 15-October 20 2010, Politecnico di Milano (Milano, Italy).

October 13, 2010	<ul style="list-style-type: none"> • Four-hour lecture titled “Efficient Methods of Sampling Uncertain Variables: Subset and Line Sampling”, held during the Multidisciplinary course “Monte Carlo Simulation Methods for the Quantitative Analysis of Stochastic and Uncertain Systems” offered by the “Scuola di Dottorato di Ricerca” of the Politecnico di Milano, 2nd Edition, September 15-October 20 2010, Politecnico di Milano (Milano, Italy).
October 21, 2009	<ul style="list-style-type: none"> • Three-hour lecture titled “Markov Chain Monte Carlo for model and parameter identification”, held during the Multidisciplinary course “Monte Carlo Simulation Methods for the Quantitative Analysis of Stochastic and Uncertain Systems” offered by the “Scuola di Dottorato di Ricerca” of the Politecnico di Milano, 1st Edition, 18 September-21 October 2009, Politecnico di Milano (Milano, Italy).
October 14, 2009	<ul style="list-style-type: none"> • Four-hour lecture titled “Efficient Methods of Sampling Uncertain Variables: Subset and Line Sampling”, held during the Multidisciplinary course “Monte Carlo Simulation Methods for the Quantitative Analysis of Stochastic and Uncertain Systems” offered by the “Scuola di Dottorato di Ricerca” of the Politecnico di Milano, 1st Edition, 18 September-21 October 2009, Politecnico di Milano (Milano, Italy).
International Ph.D. courses	
October 19, 2016	<ul style="list-style-type: none"> • Four-hour lecture and three-hour tutorial titled “Uncertainty modeling”, held during the 5th PhD School on “Vulnerability, risk and resilience of complex system and critical infrastructures”, organized by CentraleSupélec (Chatenay-Malabry, France), Politecnico di Milano (Milano, Italy), Beihang University (Beijing, China) and TIME Association (Chatenay-Malabry, France), 16-22 October 2016, Beihang University (Beijing, China). Total activity: lectures (4hrs), tutorials (3hrs).
April 6, 2016	<ul style="list-style-type: none"> • Two-hour lecture titled “Vulnerability/Risk Assessment: Use of Non Probabilistic Approaches”, held during the Easter School on ‘Systems Approaches to Risk Assessment and Management’, organized by the EPSRC & ESRC Centre for Doctoral Training in Quantification and Management of Risk & Uncertainty in Complex Systems & Environments, 4th-8th April 2016, Liverpool Institute for Risk and Uncertainty (LIRU) (Liverpool, UK). Total activity: lectures (2hrs).
April 4, 2016	<ul style="list-style-type: none"> • Two-hour lecture titled “Complex Systems Applications: Cases in Networked Infrastructures”, held during the Easter School on ‘Systems Approaches to Risk Assessment and Management’, organized by the EPSRC & ESRC Centre for Doctoral Training in Quantification and Management of Risk & Uncertainty in Complex Systems & Environments, 4th-8th April 2016, Liverpool Institute for Risk and Uncertainty (LIRU) (Liverpool, UK). Total activity: lectures (2hrs).
April 4, 2016	<ul style="list-style-type: none"> • Two-hour lecture titled “Risk, Vulnerability and Resilience Assessment”, held during the Easter School on ‘Systems Approaches to Risk Assessment and Management’, organized by the EPSRC & ESRC Centre for Doctoral Training in Quantification and Management of Risk & Uncertainty in Complex Systems & Environments, 4th-8th April 2016, Liverpool Institute for Risk and Uncertainty (LIRU) (Liverpool, UK). Total activity: lectures (2hrs).
September 16, 2015	<ul style="list-style-type: none"> • Four-hour lecture titled “Uncertainty modeling”, held during the 4th PhD School on “Vulnerability, risk and resilience of complex system and critical infrastructures”, organized by CentraleSupélec (Gif-Sur-Yvette, France), Politecnico di Milano (Milano, Italy) and TIME Association, 14-18 September 2015, CentraleSupélec (Gif-Sur-Yvette, France). Total activity: lectures (4hrs).
October 15, 2014	<ul style="list-style-type: none"> • Four-hour lecture and three-hour tutorial titled “Uncertainty modeling”, held during the 3rd PhD School on “Vulnerability, risk and resilience of complex system”, organized by Ecole Centrale Paris (Chatenay-Malabry, France), Politecnico di Milano (Milano, Italy) and Supélec (Gif-Sur-Yvette, France), 13-17 October 2014, Supélec, Gif-Sur-Yvette, France.
September 3, 2013	<ul style="list-style-type: none"> • Four-hour lecture and three-hour tutorial titled “Uncertainty modeling”, held during the 2nd PhD School on “Risk and uncertainty modelling”, organized by Ecole Centrale Paris (Chatenay-Malabry, France), Politecnico di Milano (Milano, Italy) and Supélec (Gif-Sur-Yvette, France), 2-8 September 2013, Palazzo Natta, Como, Italy.

May 13, 2009

- Two-hour “tutorial” lecture titled “Bootstrapped Artificial Neural Networks for Uncertainty and Sensitivity Analysis in Probabilistic Risk Assessment”, held during Course 22.38 “Probability and its Application to Reliability, Quality Control, and Risk Assessment” by Prof. Apostolakis, included in the Ph.D. Course in “Nuclear Science and Engineering” of the Massachusetts Institute of Technology (MIT), Cambridge, Massachusetts (USA).

Lectures held during Graduation (Bachelor and Master) courses

(Lectures = 171h; Exercise sessions = 85h; Tutorials = 0h; Exams = 9h)

National (Italian) Bachelor and Master Courses

March-June 2021

- Lectures (24h) and exercise sessions (8h) held during the course “Risk Analysis” of the Second Level graduation course in Petroleum and Mining Engineering, Politecnico di Torino (Torino, Italy).

March-June 2020

- Lectures (24h) and exercise sessions (25h) held during the course “Risk Analysis” of the Second Level graduation course in Petroleum and Mining Engineering, Politecnico di Torino (Torino, Italy).

March-June 2019

- Lectures (24h) held during the course “Risk Analysis” of the Second Level graduation course in Petroleum and Mining Engineering, Politecnico di Torino (Torino, Italy).

September-December 2018

- Exercise sessions (18h) held during the course “Monte Carlo methods, safety and risk analysis” of the Second Level graduation courses in Energy and Nuclear Engineering and Chemical and Sustainable Processes Engineering, Politecnico di Torino (Torino, Italy).

March-June 2018

- Lectures (24h) and exercise sessions (9h) held during the course “Risk Analysis” of the Second Level graduation course in Petroleum and Mining Engineering, Politecnico di Torino (Torino, Italy).

September-December 2017

- Exercise sessions (18h) held during the course “Monte Carlo methods, safety and risk analysis” of the Second Level graduation courses in Energy and Nuclear Engineering and Chemical and Sustainable Processes Engineering, Politecnico di Torino (Torino, Italy).

April- June 2017

- Lectures (30h) and exams (9h) held during the course “Optimal use and safety of energy plants” of the First Level graduation course in Energy Engineering, Politecnico di Torino (Torino, Italy). The topics covered qualitative and quantitative methods for the risk assessment of energy systems.

June 5, 2012

- Three-hour exercise session titled “Markov Reliability and Availability Analysis”, held during the course “Reliability, Safety and Risk Analysis A+B” of the Second Level graduation course in Nuclear Engineering, Environmental Engineering, Mathematical Engineering and Safety Engineering, Politecnico di Milano (Milano, Italy).

May 22, 2012

- Four-hour lecture titled “Uncertainty and Sensitivity Analysis”, held during the course “Reliability, Safety and Risk Analysis A+B” of the Second Level graduation course in Nuclear Engineering, Environmental Engineering, Mathematical Engineering and Safety Engineering, Politecnico di Milano (Milano, Italy).

May 7-8, 2012

- Five-hour lecture titled “Markov Reliability and Availability Analysis”, held during the course “Reliability, Safety and Risk Analysis A+B” of the Second Level graduation course in Nuclear Engineering, Environmental Engineering, Mathematical Engineering and Safety Engineering, Politecnico di Milano (Milano, Italy).

April 26, 2012

- One-hour lecture titled “Subset Simulation for the Safety Assessment of Radioactive Waste Repositories”, held during the course “Safety Assessment of Radioactive Waste Repositories” of the Second Level graduation course in Nuclear Engineering, Politecnico di Milano (Milano, Italy).

April 19, 2012

- Two-hour lecture titled “Uncertainty and Sensitivity Analysis”, held during the course “Safety Assessment of Radioactive Waste Repositories” of the Second Level graduation course in Nuclear Engineering, Politecnico di Milano (Milano, Italy).

April 4, 2012

- Two-hour lecture titled "Multi-objective Genetic Algorithms", held during the course “Nuclear Power Plants Operation and Maintenance” of the Second Level graduation course in Nuclear Engineering, Politecnico di Milano (Milano, Italy).

May 23, 2011	<ul style="list-style-type: none"> • Four-hour lecture titled “Uncertainty and Sensitivity Analysis”, held during the course “Computational Methods for Reliability and Risk Analysis I+II” of the Second Level graduation course in Nuclear Engineering, Environmental Engineering and Safety Engineering, Politecnico di Milano (Milano, Italy).
May 10, 2011	<ul style="list-style-type: none"> • Four-hour exercise session titled “Markov Reliability and Availability Analysis”, held during the course “Computational Methods for Reliability and Risk Analysis I+II” of the Second Level graduation course in Nuclear Engineering, Environmental Engineering and Safety Engineering, Politecnico di Milano (Milano, Italy).
International Bachelor and Master courses	
October 12, 2016	<ul style="list-style-type: none"> • Three-hour lecture titled “Dependent and Common Cause Failure Modeling and Analysis”, held during the course “Risk Management” of the international Master in “Nuclear Energy” organized by a consortium of several academic institutions (Université Paris-Sud 11, ParisTech, Ecole Centrale Paris and Supelec and CEA-INSTN) with the support of several industrial establishments (EDF, Areva, GDF SUEZ), CEA-INSTN (Saclay, France).
September 21, 2016	<ul style="list-style-type: none"> • Three-hour lecture titled “Probabilistic models of failure processes, Failure time distributions, Statistical estimation of failure parameters; Analytical calculations of system reliability and availability”, held during the course “Risk Management” of the international Master in “Nuclear Energy” organized by a consortium of several academic institutions (Université Paris-Sud 11, ParisTech, Ecole Centrale Paris and Supelec and CEA-INSTN) with the support of several industrial establishments (EDF, Areva, GDF SUEZ), CEA-INSTN (Saclay, France).
May 4 and 11, 2016	<ul style="list-style-type: none"> • Two lectures of three hours titled “Markov Models for Reliability and Availability Analysis”, held during the course “Risk Assessment and Management” of the Engineering School (2nd year) of the École CentraleSupélec (Chatenay-Malabry, France). Total activity: lectures (6hrs).
October 7, 2015	<ul style="list-style-type: none"> • Three-hour lecture titled “Dependent and Common Cause Failure Modeling and Analysis”, held during the course “Risk Management” of the international Master in “Nuclear Energy” organized by a consortium of several academic institutions (Université Paris-Sud 11, ParisTech, Ecole Centrale Paris and Supelec and CEA-INSTN) with the support of several industrial establishments (EDF, Areva, GDF SUEZ), CEA-INSTN (Saclay, France).
September 23, 2015	<ul style="list-style-type: none"> • Three-hour lecture titled “Probabilistic models of failure processes, Failure time distributions, Statistical estimation of failure parameters; Analytical calculations of system reliability and availability”, held during the course “Risk Management” of the international Master in “Nuclear Energy” organized by a consortium of several academic institutions (Université Paris-Sud 11, ParisTech, Ecole Centrale Paris and Supelec and CEA-INSTN) with the support of several industrial establishments (EDF, Areva, GDF SUEZ), CEA-INSTN (Saclay, France).
October 21, 2014	<ul style="list-style-type: none"> • Three-hour lecture titled “Markov Models for Reliability and Availability Analysis”, held during the course “Risk Management” of the international Master in “Nuclear Energy” organized by a consortium of several academic institutions (Université Paris-Sud 11, ParisTech, Ecole Centrale Paris and Supelec and CEA-INSTN) with the support of several industrial establishments (EDF, Areva, GDF SUEZ), CEA-INSTN (Saclay, France).
October 10, 2013	<ul style="list-style-type: none"> • Three-hour lecture titled “Markov Models for Reliability and Availability Analysis”, held during the course “Risk Management” of the international Master in “Nuclear Energy” organized by a consortium of several academic institutions (Université Paris-Sud 11, ParisTech, Ecole Centrale Paris and Supelec and CEA-INSTN) with the support of several industrial establishments (EDF, Areva, GDF SUEZ), CEA-INSTN (Saclay, France).
October 17, 2012	<ul style="list-style-type: none"> • Three-hour lecture titled “Markov Models for Reliability and Availability Analysis”, held during the course “Risk Management” of the international Master in “Nuclear Energy” organized by a consortium of several academic institutions (Université Paris-Sud 11, ParisTech, Ecole Centrale Paris and Supelec and CEA-INSTN) with the support of several industrial establishments (EDF, Areva, GDF SUEZ), CEA-INSTN (Saclay, France).

THESIS SUPERVISION

Bachelor Theses

July 2019

- Supervisor of three thesis projects of students graduated at Politecnico di Torino (Torino, Italy) in Energy Engineering.

September 2018

- Supervisor of five thesis projects of students graduated at Politecnico di Torino (Torino, Italy) in Energy Engineering.

Master Theses

September 2020-March 2021

- Co-Supervisor of the thesis project titled “Applicazione di meta-modelli a supporto della simulazione CFD di rilasci incidentali in ambito Oil & Gas” (Application of meta-models to support CFD simulation of incidental releases in the Oil & Gas context) by Emanuela Maffia, at Politecnico di Torino (Torino, Italy), Energy and Nuclear Engineering, graduated with 102/110.

September 2020-March 2021

- Co-Supervisor of the thesis project titled “Studio di getti sotto-espansi e applicazione di meta-modelli a supporto della simulazione CFD di rilasci incidentali in ambito Oil & Gas” (Study of under-expanded jets and application of meta-models to support CFD simulation of accidental releases in the Oil & Gas sector) by Federica Carbone, at Politecnico di Torino (Torino, Italy), Energy and Nuclear Engineering, graduated with 101/110.

October 2019-October 2020

- Co-Supervisor of the thesis project titled “An advanced computational framework for the inverse uncertainty quantification of thermal-hydraulic code applications for the analysis of passive safety systems” by Giovanni Roma, at Politecnico di Torino (Torino, Italy), Energy and Nuclear Engineering, graduated with 110/110 cum laude.

October 2019-July 2020

- Supervisor of the thesis project titled “An Efficient Metamodel-based Exploration Framework for Characterizing the Critical Failure Regions of a Nuclear Passive Safety System” by Lorenzo Puppo, at Politecnico di Torino (Torino, Italy), Energy and Nuclear Engineering, graduated with 110/110 cum laude.

October 2018-September 2019

- Supervisor of the thesis project titled “Computational Methods for the Safety Analysis of the simplified cooling circuit for a Tokamak superconducting magnet” by Vincenzo Destino, at Politecnico di Torino (Torino, Italy), Energy and Nuclear Engineering, graduated with 110/110 cum laude.

October 2017-July 2018

- Supervisor of the thesis project titled “Computational Methods for the Integrated Deterministic and Probabilistic Safety Assessment of a Simplified Cooling Circuit for a Tokamak Superconducting Magnet” by Rosario Bellaera, graduated at Politecnico di Torino (Torino, Italy) in Energy and Nuclear Engineering with 106/110.

March 2010-April 2011

- Supervisor of the thesis project titled “Uncertainty Analysis in Risk Assessment for Environmental Applications” by Elisa Ferrario, graduated at the Politecnico di Milano in Environmental Engineering with 110/110 with honors.

March-July 2007

- Co-supervisor of the thesis project titled “Locally Recurrent Neural Networks for Nonlinear Dynamic Modelling” by Lucia R. Golea, graduated at the Politechnica University of Timisoara in Computer Science with 9.72/10.

PhD Theses

November 2018-today

- Co-supervisor of the thesis project titled “Methods for safety and stability analysis of nuclear systems” by ABRATE Nicolò, thesis of Politecnico di Torino (Torino, Italy), supervisors: Nicola PEDRONI, Sandra DULLA.

January 2016-November 2018
(defended)

- Co-supervisor of the thesis project titled “Construction of fragility curves by means of advanced statistical methods” by WANG Zhiyi, thesis of University Paris Saclay-Ecole CentraleSupélec (Gif-Sur-Yvette, France), defended on 27 November 2018, supervisors: Nicola PEDRONI, Enrico ZIO, Irmela ZENTNER.

January 2016-December 2019
(defended)

- Co-supervisor of the thesis project titled “Methods for the representation of the uncertainty associated to a probabilistic risk assessment study in a decision making context” by Tasneem BANI MUSTAFA, thesis of University Paris Saclay-Ecole CentraleSupélec (Gif-Sur-Yvette, France), supervisors: Nicola PEDRONI, Enrico ZIO.

- February 2014-February 2017 (defended)**

 - Co-supervisor of the thesis project titled “Adaptive simulation methods for risk assessment of complex systems” by Pietro Turati, thesis of University Paris Saclay-Ecole CentraleSupélec (Gif-Sur-Yvette, France), defended on 16 May 2017, supervisors: Nicola PEDRONI, Enrico ZIO.
- February 2012-July 2015 (defended)**

 - Co-supervisor of the thesis project titled “Decision making and modeling uncertainty for the multicriteria analysis of complex energy systems” by Tairan Wang, thesis of CentraleSupélec (Chatenay-Malabry, France), defended on 8 July 2015, supervisors: Nicola PEDRONI, Vincent MOUSSEAU, Enrico ZIO.
- February 2012-February 2015 (defended)**

 - Co-supervisor of the thesis project titled “Critical Infrastructure Protection by Advanced Modelling, Analysis and Optimization for Cascading Failure Mitigation and Resilience” by Yiping Fang, thesis of Ecole Centrale Paris (Chatenay-Malabry, France), defended on 2 February 2015, supervisors: Nicola PEDRONI, Enrico ZIO. Now post-doctoral fellow at ETH Zurich, Laboratory of Reliability and Risk Engineering, Institute of Energy Technology at the Department of Mechanical and Process Engineering (D-MAVT)..
- September 2011-September 2014 (defended)**

 - Co-supervisor of the thesis project titled “System-of-systems modeling and simulation for the risk analysis of industrial installations and critical infrastructures” by Elisa Ferrario, thesis of Ecole Centrale Paris (Chatenay-Malabry, France), defended on 10 September 2014, supervisors: Nicola PEDRONI, Enrico ZIO. Now post-doctoral fellow at CentraleSupélec, Laboratoire Génie Industriel.

PUBLICATIONS (97)

Synthetic numerical indicators

H-index of the Author ID 14049106600 on Scopus: 21
 H-index on ISI Web of Science: 19
 H-index on Google Scholar: 24

Papers submitted to international journals (4)

- 2022**

 1. V. Destino, N. Pedroni, R. Bonifetto, F. Di Maio, L. Savoldi, E. Zio, “Metamodeling and On-line Clustering for Loss-Of-Flow Accident Precursors Identification in a Superconducting Magnet Cryogenic Cooling Circuit”, submitted to *Energies*.
- 2022**

 2. F. Di Maio, N. Pedroni, B. Tóth, L. Burgazzi, E. Zio, “Reliability Assessment of Passive Safety Systems for Nuclear Energy Applications: state-of-the-art and open issues”, submitted to *Energies*.
- 2021**

 3. A. C. Ugenti, G. F. Nallo, A. Carpignano, N. Pedroni and R. Zanino, “Functional safety assessment of a CPS-based liquid metal divertor for the EU DEMO fusion reactor”, submitted to *Fusion Engineering and Design*.
- 2020**

 4. L. Puppo, A. Bersano, C. Bertani, F. Di Maio, N. Pedroni, E. Zio, “A Framework based on Finite Mixture Models and Adaptive Kriging for Characterizing the Failure Regions of a Nuclear Passive Safety System”, submitted to *Reliability Engineering and System Safety*.

Editorials (1)

- 2017**

 5. N. Pedroni, E. Zio, F. Cadini, “Advanced Monte Carlo Methods and Applications”, Special Collection Announcement for the journal *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering*, Volume 3, Issue 4, December 2017, doi: 10.1061/AJRUA6.0000921, 02017001, eISSN 2376-7642, published by the American Society of Civil Engineers.

Publications on international journals (published or accepted) (50)

- 2022**

 6. N. Pedroni, “Computational methods for the robust optimization of the design of a dynamic aerospace system in the presence of aleatory and epistemic uncertainties”, *Mechanical Systems and Signal Processing*, Volume 164, 1 February 2022, 108206, ISSN 0888-3270, published by Elsevier Ltd, doi: 10.1016/j.ymssp.2021.108206.

- 2021 7. L. Puppo, N. Pedroni, A. Bersano, F. Di Maio, C. Bertani, E. Zio, "Failure Identification in a Nuclear Passive Safety System by Monte Carlo Simulation with Adaptive Kriging", *Nuclear Engineering and Design*, Volume 380, 15 August 2021, 111308, ISSN 0029-5493, published by Elsevier Ltd, DOI: 10.1016/j.nucengdes.2021.111308.
- 2021 8. G. Roma, F. Di Maio, A. Bersano, N. Pedroni, C. Bertani, F. Mascari, E. Zio, "A Bayesian framework of inverse uncertainty quantification with principal component analysis and Kriging for the reliability analysis of passive safety systems", accepted on *Nuclear Engineering and Design*, Volume 379, 1 August 2021, 111230, ISSN 0029-5493, published by Elsevier Ltd, doi: 10.1016/j.nucengdes.2021.111230.
- 2021 9. V. Destino, R. Bonifetto, F. Di Maio, N. Pedroni, R. Zanino, E. Zio, "Identification of LOFA precursors in ITER superconducting magnet cryogenic cooling circuit", *Reliability Engineering and System Safety*, Volume 209, May 2021, paper 107426, ISSN 0951-8320, published by Elsevier Ltd, doi: 10.1016/j.ress.2020.107426.
- 2020 10. T. Bani-Mustafa, N. Pedroni, E. Zio, D. Vasseur, F. Beaudouin, "A hierarchical tree-based decision making approach for assessing the relative trustworthiness of risk assessment models", *Proceedings of the Institution of Mechanical Engineers, Part O, Journal of Risk and Reliability*, Volume 234, Issue 6, pp. 748-763, doi: 10.1177/1748006X20929111, ISSN: 1748-006X, published by SAGE Publishing.
- 2020 11. R. Bellaera, R. Bonifetto, F. Di Maio, N. Pedroni, L. Savoldi, R. Zanino, E. Zio, "Integrated Deterministic and Probabilistic Safety Assessment of a Superconducting Magnet Cryogenic Cooling Circuit for Nuclear Fusion Applications", *Reliability Engineering and System Safety*, Volume 201, September 2020, Paper 106945, ISSN 0951-8320, published by Elsevier Ltd, doi: 10.1016/j.ress.2020.106945.
- 2020 12. T. R. Wang, V. Mousseau, N. Pedroni, and E. Zio, "Identification of protective actions to reduce the vulnerability of safety-critical systems to malevolent intentional acts: an optimization-based decision-making approach", *Risk Analysis, An International Journal*, Volume 40, Issue 3, 2020, pp. 565-587, ISSN 0272-4332, doi: 10.1111/risa.13420, published by Wiley-Blackwell.
- 2019 13. R. Bonifetto, N. Pedroni, L. Savoldi, R. Zanino, "Identification of the Postulated Initiating Events of Accidents Occurring in a Toroidal Field Magnet of the EU DEMO", *Fusion Science and Technology*, Volume 75, Issue 5, 2019, pp. 412-421.
- 2018 14. L. Savoldi, R. Bonifetto, N. Pedroni and R. Zanino, "Analysis of a protected Loss Of Flow Accident (LOFA) in the ITER TF coil cooling circuit", *IEEE Transactions on Applied Superconductivity*, vol. 28 (3), 2018, pp. 4202009, ISSN:1051-8223, DOI:10.1109/TASC.2017.2786688.
- 2018 15. Z. Wang, N. Pedroni, I. Zentner, E. Zio, "Seismic fragility analysis with artificial neural networks: application to nuclear power plant equipment", *Engineering Structures*, vol. 162, 2018, pp. 213-225, ISSN: 0141-0296, DOI: 10.1016/j.engstruct.2018.02.024.
- 2018 16. P. Turati, A. Cammi, S. Lorenzi, N. Pedroni, E. Zio, "Adaptive simulation for failure identification in the Advanced Lead Fast Reactor European Demonstrator", *Progress in Nuclear Energy*, vol. 103, 2018, pp. 176-190, ISSN: 0149-1970, DOI: 10.1016/j.pnucene.2017.11.013.
- 2017 17. P. Turati, N. Pedroni, E. Zio, "Simulation-based exploration of high-dimensional system models for identifying unexpected events", *Reliability Engineering and System Safety*, Volume 165, September 2017, Pages 317-330, ISSN 0951-8320, published by Elsevier Ltd, doi: 10.1016/j.ress.2017.04.004.
- 2017 18. Y.-P. Fang, N. Pedroni, E. Zio, "Comparing network-centric and power flow models for the optimal allocation of link capacities in a cascade-resilient power transmission network", *IEEE Systems Journal*, Volume 11, Issue 3, Page(s): 1632-1643, Sept. 2017, DOI: 10.1109/JSYST.2014.2352152, ISSN 1932-8184, published by IEEE Systems Council, Institute of Electrical and Electronics Engineers.

- 2017 19. N. Pedroni, E. Zio, “An Adaptive Metamodel-Based Subset Importance Sampling approach for the assessment of the functional failure probability of a thermal-hydraulic passive system”, *Applied Mathematical Modelling*, Volume 48, August 2017, Pages 269-288, ISSN: 0307-904X, published by Elsevier Ltd, doi: 10.1016/j.apm.2017.04.003.
- 2017 20. N. Pedroni, E. Zio, A. Pasanisi, M. Couplet, “A critical discussion and practical recommendations on some issues relevant to the non-probabilistic treatment of uncertainty in engineering risk assessment”, *Risk Analysis, an International Journal*, Volume 37, Issue 7, July 2017, Pages: 1315–1340, ISSN 0272-4332, published by Wiley-Blackwell, doi: 10.1111/risa.12705.
- 2017 21. E. Ferrario, N. Pedroni, E. Zio, F. Lopez-Caballero, “Bootstrapped Artificial Neural Networks for the seismic analysis of structural systems”, *Structural Safety*, Volume 67, July 2017, Pages 70-84, ISSN: 0167-4730, published by Elsevier Ltd, doi: 10.1016/j.strusafe.2017.03.003.
- 2017 22. P. Turati, N. Pedroni, E. Zio, “An adaptive simulation framework for the efficient, semi-automatic exploration of extreme and unexpected events in the risk assessment of dynamic engineered systems”, *Risk Analysis, an International Journal (JCR)*, Volume 37, Issue 1, January 2017, Pages: 147–159, ISSN 0272-4332, published by Wiley-Blackwell, DOI: 10.1111/risa.12593.
- 2017 23. T.-R. Wang, V. Mousseau, N. Pedroni, E. Zio, “An empirical classification-based framework for the safety criticality assessment of energy production systems, in presence of inconsistent data”, *Reliability Engineering and System Safety (JCR)*, Volume 157, January 2017, Pages 139-151, ISSN 0951-8320, published by Elsevier Ltd, doi: 10.1016/j.res.2016.08.021.
- 2016 24. E. Ferrario, N. Pedroni, E. Zio, “Evaluation of the robustness of critical infrastructures by Hierarchical Graph representation, clustering and Monte Carlo simulation”, *Reliability Engineering and System Safety (JCR)*, Volume 155, November 2016, Pages 78–96, ISSN 0951-8320, published by Elsevier Ltd, DOI: 10.1016/j.res.2016.06.007.
- 2016 25. P. Turati, N. Pedroni, E. Zio, “Advanced RESTART method for the estimation of the probability of failure of highly reliable hybrid dynamic systems”, *Reliability Engineering and System Safety*, Volume 154, October 2016, Pages 117–126, ISSN 0951-8320, published by Elsevier Ltd, DOI: 10.1016/j.res.2016.04.020.
- 2016 26. Y.-P. Fang, N. Pedroni, E. Zio, “Resilience-based component importance measures for critical infrastructure network systems”, *IEEE Transactions on Reliability*, Volume 65, Issue, 2, 2016, pp. 502-512, ISSN 0018-9529, published by IEEE Reliability Society, DOI: 10.1109/TR.2016.2521761.
- 2016 27. T.-R. Wang, N. Pedroni, E. Zio, “Identification of protective actions to reduce the vulnerability of safety-critical systems to malevolent intentional acts: a sensitivity-based decision-making approach”, *Reliability Engineering and System Safety*, Volume 147, 2016, pp. 9-18, ISSN 0951-8320, published by Elsevier Ltd, DOI: 10.1016/j.res.2015.09.005.
- 2016 28. N. Pedroni, E. Zio, A. Pasanisi, M. Couplet, “Empirical Comparison of Two Methods for the Bayesian Update of the Parameters of Probability Distributions in a Two-Level Hybrid Probabilistic-Possibilistic Uncertainty Framework for Risk Assessment”, *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering*, Volume 2, Issue 1, March 2016, DOI: 10.1061/AJRUA6.0000848, 04015015, eISSN 2376-7642, published by the American Society of Civil Engineers.
- 2015 29. Y.-P. Fang, N. Pedroni, E. Zio, “Optimization of Cascade-Resilient Electrical Infrastructures and its Validation by Power Flow Modelling”, *Risk Analysis, an International Journal*, Volume 35, Issue 4, April 2015, pp. 594–607, ISSN 0272-4332, published by Wiley-Blackwell, DOI: 10.1111/risa.12396.
- 2015 30. E. Ferrario, N. Pedroni, E. Zio, “Analysis of the robustness and recovery of critical infrastructures by Goal Tree Success Tree – Dynamic Master Logic Diagram, within a multi-state system-of-systems framework, in the presence of epistemic uncertainty”, *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part B: Mechanical Engineering (Special Issue on Non-probabilistic Approaches for Handling Uncertainty in Engineering)*, Vol. 1, Issue 3, 031001, 1 July 2015, 14 pages, DOI: 10.1115/1.4030439, ISSN 2332-9025, published by the American Society of Mechanical Engineers.

- 2015 31. N. Pedroni, E. Zio, "Hybrid Uncertainty and Sensitivity Analysis of the Model of an Twin-Jet Aircraft", accepted for publication on *Journal of Aerospace Information Systems* (Special Issue *NASA Langley Multidisciplinary Uncertainty Quantification Challenge*), Vol. 12, 2015, pp. 73-96, DOI: 10.2514/1.I010265, ISSN 2327-3097, published by American Institute of Aeronautics and Astronautics.
- 2015 32. T.-R. Wang, V. Mousseau, N. Pedroni, E. Zio, "Assessing the Performance of a Classification-Based Vulnerability Analysis Model", *Risk Analysis, an International Journal*, Volume 35, Issue 9, September 2015, Pages 1674–1689, DOI: 10.1111/risa.12305, ISSN 0272-4332, published by Wiley-Blackwell.
- 2014 33. C.-K. Lo, N. Pedroni, E. Zio, "Treating uncertainties in a nuclear seismic probabilistic risk assessment by means of the Dempster-Shafer theory of evidence", *Nuclear Engineering and Technology*, Vol. 46, Issue 1, 2014, pp. 11-26, ISSN 1738-5733, published by Korean Nuclear Society, DOI: 10.5516/NET.03.2014.701.
- 2013 34. N. Pedroni, E. Zio, E. Ferrario, A. Pasanisi, M. Couplet, "Hierarchical propagation of probabilistic and non-probabilistic uncertainty in the parameters of a risk model", *Computers and Structures* (Special Issue on *Uncertainty Quantification in Structural Analysis and Design*), Vol. 126, Sept. 2013, pp. 199–213, ISSN 0045-7949, published by Elsevier Ltd, DOI: 10.1016/j.compstruc.2013.02.003.
- 2013 35. Y.F. Li, N. Pedroni, E. Zio, "A Memetic Evolutionary Multi-Objective Optimization Method for Environmental Power Unit Commitment", *IEEE Transactions on Power Systems*, Vol. 28, Issue 3, 2013, pp. 2660-2669, ISSN 0885-8950, published by IEEE Power & Energy Society, DOI: 10.1109/TPWRS.2013.2241795.
- 2013 36. N. Pedroni, E. Zio, "Uncertainty analysis in fault tree models with dependent basic events", *Risk Analysis, an International Journal*, Vol. 33, Issue 6, 2013, pp. 1146–1173, ISSN 0272-4332, published by Wiley-Blackwell, DOI: 10.1111/j.1539-6924.2012.01903.x.
- 2012 37. N. Pedroni, E. Zio, "Empirical comparison of methods for the hierarchical propagation of hybrid uncertainty in risk assessment, in presence of dependences", *International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems*, Vol. 20, Issue 4, 2012, pp. 509-557, ISSN 0218-4885, published by World Scientific Publishing, DOI: 10.1142/S0218488512500250.
- 2012 38. E. Zio, N. Pedroni, "Monte Carlo Simulation-based Sensitivity Analysis of the model of a Thermal-Hydraulic Passive System", *Reliability Engineering and System Safety*, Vol. 107, Nov. 2012, pp. 90-106, ISSN 0951-8320, published by Elsevier Ltd, DOI: 10.1016/j.res.2011.08.006.
- 2012 39. E. Zio, M. Broggi, L. Golea, N. Pedroni, "Failure and Reliability Predictions by Locally Recurrent Neural Networks", in: V. Cozzani, E. De Rademaeker (Eds.), *Chemical Engineering Transactions – Proceedings of the 5th International Conference on Safety & Environment in Process & Power Industry (CISAP-5)*, Milano, Italy, 3-6 June 2012, Volume 26, pp. 117-122, published by The Italian Association of Chemical Engineering-AIDIC, 2012, ISBN 978-88-95608-17-4, ISSN 1974-9791, DOI: 10.3303/CET1226020.
- 2012 40. F. Cadini, D. Avram, N. Pedroni, E. Zio, "Subset Simulation of a reliability model for radioactive waste repository performance assessment", *Reliability Engineering and System Safety*, Volume 100, Apr. 2012, pp. 75-83, ISSN 0951-8320, published by Elsevier Ltd, DOI: 10.1016/j.res.2011.12.012.
- 2011 41. E. Zio, N. Pedroni, "How to effectively compute the reliability of a thermal-hydraulic passive system", *Nuclear Engineering and Design*, Volume 241, Issue 1, Jan. 2011, pp. 310-327, ISSN 0029-5493, published by Elsevier Ltd, DOI: 10.1016/j.nucengdes.2010.10.029.
- 2010 42. E. Zio, N. Pedroni, "An optimized Line Sampling method for the estimation of the failure probability of nuclear passive systems", *Reliability Engineering and System Safety*, Volume 95, Issue 12, Dec. 2010, pp. 1300-1313, ISSN 0951-8320, published by Elsevier Ltd, DOI: 10.1016/j.res.2010.06.007.

- 2010 43. E. Zio, G. E. Apostolakis, N. Pedroni, "Quantitative functional failure analysis of a thermal-hydraulic passive system by means of bootstrapped Artificial Neural Networks", *Annals of Nuclear Energy*, Volume 37, Issue 5, 2010, pp. 639-649, ISSN 0306-4549, published by Elsevier Ltd, DOI: 10.1016/j.anucene.2010.02.012.
- 2010 44. N. Pedroni, E. Zio, G. E. Apostolakis, "Comparison of bootstrapped Artificial Neural Networks and quadratic Response Surfaces for the estimation of the functional failure probability of a thermal-hydraulic passive system", *Reliability Engineering and System Safety*, Volume 95, Issue 4, 2010, pp. 386-395, ISSN 0951-8320, published by Elsevier Ltd, DOI: 10.1016/j.res.2009.11.009.
- 2009 45. E. Zio, N. Pedroni, M. Broggi, L. Golea, "Modelling the dynamics of the Lead Bismuth Eutectic eXperimental Accelerator Driven System by an Infinite Impulse Response Locally Recurrent Neural Network", *Nuclear Engineering and Technology*, Volume 41, Issue 10, 2009, pp. 1293-1306, ISSN 1738-5733, published by the Korean Nuclear Society, DOI: 10.5516/NET.2009.41.10.1293.
- 2009 46. E. Zio, N. Pedroni, "Functional Failure Analysis of a Thermal-Hydraulic Passive System by Means of Line Sampling", *Reliability Engineering and System Safety*, Volume 9, Issue 11, Nov. 2009, pp. 1764-1781, ISSN 0951-8320, published by Elsevier Ltd, DOI: 10.1016/j.res.2009.05.010.
- 2009 47. E. Zio, M. Broggi, N. Pedroni, "Nuclear Reactor Dynamics On-Line Estimation by Locally Recurrent Neural Networks", *Progress in Nuclear Energy*, Volume 51, Issue 3, Apr. 2009, pp. 573-581, ISSN 0149-1970, published by Elsevier Ltd, DOI: 10.1016/j.pnucene.2008.11.006.
- 2009 48. E. Zio, N. Pedroni, "Estimation of the Functional Failure Probability of a Thermal-Hydraulic Passive System by Subset Simulation", *Nuclear Engineering and Design*, Volume 239, Issue 3, Mar. 2009, pp. 580-599, ISSN 0029-5493, published by Elsevier Ltd, DOI: 10.1016/j.nucengdes.2008.11.005.
- 2009 49. P. Baraldi, N. Pedroni, E. Zio, "Application of a Niche Pareto Genetic Algorithm for Selecting Features for Nuclear Transients Classification", *International Journal of Intelligent Systems*, Volume 24, Issue 2, Feb. 2009, pp. 118-151, ISSN 0884-8173, published by Wiley Periodicals, Inc., A Wiley Company, DOI: 10.1002/int.20328.
- 2009 50. E. Zio, P. Baraldi, N. Pedroni, "Optimal Power System Generation Scheduling by Multi-Objective Genetic Algorithms With Preferences", *Reliability Engineering and System Safety*, Volume 94, Issue 2, Feb. 2009, pp. 432-444, ISSN 0951-8320, published by Elsevier Ltd, DOI: 10.1016/j.res.2008.04.004.
- 2009 51. E. Zio, N. Pedroni, "Building Confidence in the Reliability Assessment of Thermal-Hydraulic Passive Systems", *Reliability Engineering and System Safety*, Volume 94, Issue 2, Feb. 2009, pp. 268-281, ISSN 0951-8320, published by Elsevier Ltd, DOI: 10.1016/j.res.2008.03.006.
- 2008 52. F. Cadini, E. Zio, N. Pedroni, "Recurrent Neural Networks for Dynamic Reliability Analysis", *Reliability & Risk Analysis: Theory & Applications*, Volume 1, Issue 2, Jun. 2008, pp. 30-42, ISSN 1932-2321, published by Gnedenko Forum Publications, DOI: 10.1.1.595.5132.
- 2008 53. F. Cadini, E. Zio, N. Pedroni, "Validation of Infinite Impulse Response Multi-Layer Perceptron for Modeling Nuclear Dynamics", *Science and Technology of Nuclear Installations*, Volume 2008, Article ID 681890, DOI: 10.1155/2008/681890, ISSN 1687-6075, published by Hindawi Publishing Corporation.
- 2007 54. F. Cadini, E. Zio, N. Pedroni, "Simulating the Dynamics of the Neutron Flux in a Nuclear Reactor by Locally Recurrent Neural Networks", *Annals of Nuclear Energy*, Volume 34, Issue 6, Jun. 2007, pp. 483-495, ISSN 0306-4549, published by Elsevier Ltd, DOI: 10.1016/j.anucene.2007.02.013.
- 2006 55. E. Zio, P. Baraldi, N. Pedroni, "Selecting Features for Nuclear Transients Classification by Means of Genetic Algorithms", *IEEE Transactions on Nuclear Science*, Volume 53, Issue 3, Jun. 2006, pp.1479-1493, ISSN 0018-9499, published by IEEE Nuclear and Plasma Sciences Society, DOI: 10.1109/TNS.2006.873868.

Publications on proceedings of international conferences (31)

- 2020 56. N. Abrate, S. Dulla, N. Pedroni, "A Non-Intrusive Reduced Order Model for

- Light Water Reactor core stability analysis”, in: *Proceedings of the 30th European Safety and Reliability Conference and the 15th Probabilistic Safety Assessment and Management Conference*, 1-5 November 2020, Venice (Italy), pp. 4946-4952; Edited by: Piero Baraldi, Francesco Di Maio and Enrico Zio. Copyright © 2020 by ESREL2020 PSAM 15 Organizers. Published by Research Publishing, Singapore, ISBN: 978-981-14-8593-0; doi:10.3850/978-981-14-8593-0.
- 2020** 57. G. F. Nallo, N. Pedroni, A. C. Ugenti, A. Carpignano and R. Zanino, “Functional safety assessment of a liquid metal divertor for the European demo tokamak”, in: *Proceedings of the 30th European Safety and Reliability Conference and the 15th Probabilistic Safety Assessment and Management Conference*, 1-5 November 2020, Venice (Italy), pp. 750 (Abstract); Edited by: Piero Baraldi, Francesco Di Maio and Enrico Zio. Copyright © 2020 by ESREL2020 PSAM 15 Organizers. Published by Research Publishing, Singapore, ISBN: 978-981-14-8593-0; doi:10.3850/978-981-14-8593-0.
- 2020** 58. N. Pedroni, “Computational Methods for System Optimization Under Uncertainty”, in: *Proceedings of the 30th European Safety and Reliability Conference and the 15th Probabilistic Safety Assessment and Management Conference*, 1-5 November 2020, Venice (Italy), pp. 1119-1126; Edited by: Piero Baraldi, Francesco Di Maio and Enrico Zio. Copyright © 2020 by ESREL2020 PSAM 15 Organizers. Published by Research Publishing, Singapore, ISBN: 978-981-14-8593-0; doi:10.3850/978-981-14-8593-0.
- 2020** 59. V. Destino, R. Bonifetto, N. Pedroni, L. Savoldi, F. Di Maio, E. Zio, “Advanced Methods for Loss-Of-Flow Accident Precursors Identification in a Superconducting Magnet Cryogenic Cooling Circuit”, in: *Proceedings of the 30th European Safety and Reliability Conference and the 15th Probabilistic Safety Assessment and Management Conference*, 1-5 November 2020, Venice (Italy), pp. 2303-2310; Edited by: Piero Baraldi, Francesco Di Maio and Enrico Zio. Copyright © 2020 by ESREL2020 PSAM 15 Organizers. Published by Research Publishing, Singapore, ISBN: 978-981-14-8593-0; doi:10.3850/978-981-14-8593-0.
- 2018** 60. R. Bellaera, R. Bonifetto, F. Di Maio, N. Pedroni, L. Savoldi, R. Zanino, E. Zio, “Integrated Deterministic and Probabilistic Safety Assessment of the Cooling Circuit of a Superconducting Magnet for Nuclear Fusion Applications”, in: Stein Haugen, Anne Barros, Coen van Gulijk, Trond Kongsvik, Jan Erik Vinnem (Eds.), *Safety and Reliability – Safe Societies in a Changing World: Proceedings of ESREL 2018*, June 17-21, 2018, Trondheim, Norway, pp. 2161-2168; CRC Press, London, UK, 2018, ISBN 9781351174657.
- 2017** 61. Z. Wang, N. Pedroni, I. Zentner, E. Zio, “Adaptive Artificial Neural Networks for Seismic Fragility Analysis”, in: *Proceedings of the 2017 2nd International Conference on System Reliability and Safety (ICSRS 2017)*, December 20-22, 2017, Politecnico di Milano, Milan, Italy, pp. 414-420, published by the Institute of Electrical and Electronics Engineers (IEEE), 2017, ISBN: 978-1-5386-3322-9, DOI: 10.1109/ICSRS.2017.8272857.
- 2017** 62. T. Bani-Mustafa, N. Pedroni, E. Zio, D. Vasseur, F. Beaudouin, “A hierarchical tree-based decision making approach for assessing the trustworthiness of risk assessment models”, in: *Proceedings of the 2017 International Topical Meeting on Probabilistic Safety Assessment and Analysis (PSA 2017)*, Pittsburgh, PA, USA, September 24-28, 2017, pp. 314-323, published by the American Nuclear Society (ANS), La Grange Park, Illinois, USA, 2017, ISBN: 978-0-89448-741-5.
- 2017** 63. Z. Wang, N. Pedroni, I. Zentner, E. Zio, “Computation of Seismic Fragility Curves Using Artificial Neural Network Metamodels”, in: C. Bucher, B.R. Ellingwood, and D. M. Frangopol (Eds.), *Proceedings of the 12th International Conference on Structural Safety and Reliability (ICOSSAR) 2017: Safety, Reliability, Risk, Resilience and Sustainability of Structures and Infrastructure*, Technische Universitat Wien, Wien, Austria, 6–10 August 2017, pp. 1525-1534, TU-Verlag Wien, Wien, Austria, 2017, ISBN 978-3-903024-28-1.
- 2017** 64. P. Turati, N. Pedroni, E. Zio, “Dimensionality reduction of the resilience model of a critical infrastructure network by means of elementary effects sensitivity analysis”, in: Lesley Walls, Matthew Revie, Tim Bedford (Eds.), *Risk, Reliability and Safety: Innovating Theory and Practice: Proceedings of ESREL 2016*, Glasgow, Scotland, 25-29 September 2016, pp. 2797-2804, Taylor and

- Francis Group, London, UK, 2017, ISBN 9781138029972.
- 2015** 65. E. Ferrario, N. Pedroni, E. Zio, F. Lopez-Caballero, “Application of metamodel-based techniques for the efficient seismic analysis of structural systems”, in: Luca Podofillini, Bruno Sudret, Bozidar Stojadinovic, Enrico Zio, and Wolfgang Kröger (Eds.), *Safety and Reliability of Complex Engineered Systems, Proceedings of the European Safety and RELiability Conference (ESREL) 2015*, Zurich, Switzerland, 7-10 September 2015, pp. 1193–1200, Taylor and Francis Group, London, UK, 2015, ISBN: 978-1-138-02879-1, DOI: 10.1201/b19094-157.
- 2015** 66. P. Turati, N. Pedroni, E. Zio, “An entropy-driven method for exploring extreme and unexpected accident scenarios in the risk assessment of dynamic engineered systems”, in: Luca Podofillini, Bruno Sudret, Bozidar Stojadinovic, Enrico Zio, and Wolfgang Kröger (Eds.), *Safety and Reliability of Complex Engineered Systems, Proceedings of the European Safety and RELiability Conference (ESREL) 2015*, Zurich, Switzerland, 7-10 September 2015, pp. 761–769, Taylor and Francis Group, London, UK, 2015, ISBN: 978-1-138-02879-1, DOI: 10.1201/b19094-102.
- 2015** 67. N. Pedroni, E. Zio, “Estimating the small failure probability of a nuclear passive safety system by means of an efficient Adaptive Metamodel-Based Subset Importance Sampling method”, in: Luca Podofillini, Bruno Sudret, Bozidar Stojadinovic, Enrico Zio, and Wolfgang Kröger (Eds.), *Safety and Reliability of Complex Engineered Systems, Proceedings of the European Safety and RELiability Conference (ESREL) 2015*, Zurich, Switzerland, 7-10 September 2015, pp. 1853–1861, Taylor and Francis Group, London, UK, 2015, ISBN: 978-1-138-02879-1, DOI: 10.1201/b19094-241.
- 2014** 68. Y.-P. Fang, N. Pedroni, Enrico Zio, “Optimal capacity allocation for a failure resilient electrical infrastructure”, in: Marle, F.; Jankovic, M.; Maurer, M.; Schmidt, D. M.; Lindemann, U. (Eds.), *Proceedings of the 16th International Dependency and Structure Modelling Conference, DSM 2014: Risk and Change management in complex systems*, Paris, France, 2 July-4 July 2014, pp. 197-207, Carl Hanser Verlag, Munich, Germany, 2014, ISBN: 978-1-56990-491-6.
- 2014** 69. Y.-P. Fang, N. Pedroni, Enrico Zio, “Comparing Topological and Physical Approaches to Network Modelling for the Optimization of Failure Resilient Electrical Infrastructures”, in: Michael Beer, Siu-Kui Au, Jim W. Hall (eds.), “*Vulnerability, Uncertainty, and Risk*”, *Proceedings of the Second International Conference on Vulnerability and Risk Analysis and Management (ICVRAM2014) & Sixth International Symposium on Uncertainty Modelling and Analysis (ISUMA2014)*, University of Liverpool, Liverpool, UK, 13-16 July 2014, pp. 725-735, ASCE – American Society of Civil Engineers, 2014, ISBN 978-0-7844-1360-9, DOI: 10.1061/9780784413609.074.
- 2014** 70. E. Ferrario, N. Pedroni, E. Zio, “Analysis of the Robustness of Critical Infrastructures within a Multistate Systems-of-Systems Framework in the Presence of Epistemic Uncertainties”, in: Michael Beer, Siu-Kui Au, Jim W. Hall (eds.), “*Vulnerability, Uncertainty, and Risk*”, *Proceedings of the Second International Conference on Vulnerability and Risk Analysis and Management (ICVRAM2014) & Sixth International Symposium on Uncertainty Modelling and Analysis (ISUMA2014)*, University of Liverpool, Liverpool, UK, 13-16 July 2014, pp. 715-724, ASCE – American Society of Civil Engineers, 2014, ISBN 978-0-7844-1360-9, DOI: 10.1061/9780784413609.073.
- 2014** 71. Y.-P. Fang, N. Pedroni, E. Zio, “Optimal production facility allocation for failure resilient critical infrastructures”, in: R.D.J.M. Steenbergen, P.H.A.J.M. van Gelder, S. Miraglia and A. C.W.M. Ton. Vrouwenvelder (Eds.), *Safety, Reliability and Risk Analysis, Beyond the Horizon, Proceedings of the European Safety and RELiability Conference (ESREL) 2013*, Amsterdam, The Netherlands, 29 September-2 October 2013, pp. 2605–2612, Taylor and Francis Group, London, UK, 2014, ISBN 978-1138001237, DOI: 10.1201/b15938-393.
- 2014** 72. E. Ferrario, N. Pedroni, E. Zio, “Line sampling and Fuzzy Interval Analysis for the propagation of aleatory and epistemic uncertainties in risk models”, in: R.D.J.M. Steenbergen, P.H.A.J.M. van Gelder, S. Miraglia and A. C.W.M. Ton. Vrouwenvelder (Eds.), *Safety, Reliability and Risk Analysis, Beyond the Horizon, Proceedings of the European Safety and RELiability Conference (ESREL) 2013*, Amsterdam, The Netherlands, 29 September-2 October 2013, pp.

- 3273–3280, Taylor and Francis Group, London, UK, 2014, ISBN 978-1138001237, DOI: 10.1201/b15938-498.
- 2014** 73. N. Pedroni, E. Zio, A. Pasanisi, M. Couplet, “Bayesian update of the parameters of probability distributions for risk assessment in a two-level hybrid probabilistic-possibilistic uncertainty framework”, in: R.D.J.M. Steenbergen, P.H.A.J.M. van Gelder, S. Miraglia and A. C.W.M. Ton. Vrouwenvelder (Eds.), *Safety, Reliability and Risk Analysis, Beyond the Horizon, Proceedings of the European Safety and RELiability Conference (ESREL) 2013*, Amsterdam, The Netherlands, 29 September-2 October 2013, pp. 3295–3302, Taylor and Francis Group, London, UK, 2014, ISBN 978-1138001237, DOI: 10.1201/b15938-501.
- 2014** 74. C.-K. Lo, N. Pedroni, E. Zio, “Bayesian probabilistic analysis of a nuclear power plant small loss of coolant event tree model with possibilistic parameters”, in: R.D.J.M. Steenbergen, P.H.A.J.M. van Gelder, S. Miraglia and A. C.W.M. Ton. Vrouwenvelder (Eds.), *Safety, Reliability and Risk Analysis, Beyond the Horizon, Proceedings of the European Safety and RELiability Conference (ESREL) 2013*, Amsterdam, The Netherlands, 29 September-2 October 2013, pp. 3321-3328, Taylor and Francis Group, London, UK, 2014, ISBN 978-1138001237, DOI: 10.1201/b15938-505.
- 2012** 75. N. Pedroni, E. Zio, E. Ferrario, A. Pasanisi, M. Couplet, “Propagation of aleatory and epistemic uncertainties in the model for the design of a flood protection dike”, in: *Proceedings of the joint 2012 International Conference on Probabilistic Safety Assessment and Management (PSAM 11) & European Safety and RELiability Conference (ESREL 2012)*, Helsinki, Finland, 25-29 June 2012, Volume 2, pp. 1193-1202, IAPSAM & ESRA, Printed by Curran Associates, Red Hook, NY USA, ISBN: 978-162276436-5.
- 2012** 76. P. Baraldi, N. Pedroni, E. Zio, E. Ferrario, A. Pasanisi, M. Couplet, “Monte Carlo and fuzzy interval propagation of hybrid uncertainties on a risk model for the design of a flood protection dike”, in: C. Bérenguer, A. Grall & C. Guedes Soares (Eds.), *Advances in Safety, Reliability and Risk Management - Proceedings of the European Safety and RELiability (ESREL) 2011 Conference*, Troyes, France, 18-23 September 2011, pp. 2167-2175, Taylor & Francis Group, London, United Kingdom, 2012, ISBN 978-0-415-68379-1, DOI: 10.1201/b11433-305.
- 2010** 77. E. Zio, L. Golea, N. Pedroni, G. Sansavini, “Estimation of cascade failure probability in electrical transmission networks by Subset Simulation”, in: B. Ale, I.A. Papazoglu, E. Zio (Eds.), *Reliability, Risk and Safety - Proceedings of the European Safety and RELiability (ESREL) 2010 Conference*, Rhodes, Greece, 5-9 September 2010, pp. 694-698, Taylor & Francis Group, London, United Kingdom, 2010, ISBN 978-0-415-60427-7.
- 2010** 78. E. Zio, G.E. Apostolakis, N. Pedroni, “Estimation of the failure probability of a thermal-hydraulic passive system by means of Artificial Neural Networks and quadratic Response Surfaces”, in: B. Ale, I.A. Papazoglu, E. Zio (Eds.), *Reliability, Risk and Safety - Proceedings of the European Safety and RELiability (ESREL) 2010 Conference*, Rhodes, Greece, 5-9 September 2010, pp. 714-721, Taylor & Francis Group, London, United Kingdom, 2010, ISBN 978-0-415-60427-7.
- 2010** 79. E. Zio, N. Pedroni, “Sensitivity analysis of the model of a nuclear passive system by means of Subset Simulation”, in: E. Borgonovo, A. Saltelli, S. Tarantola (Eds.), *Procedia Social and Behavioral Sciences - Proceedings of the 6th International Conference on Sensitivity Analysis of Model Output (SAMO)*, Milano, Italy, 19-22 July 2010, Volume 2, Issue 6, pp. 7778-7779, Elsevier, 2010, ISSN 1877-0428, DOI: 10.1016/j.sbspro.2010.05.224.
- 2010** 80. G.E. Apostolakis, N. Pedroni, E. Zio, “Artificial Neural Networks and quadratic Response Surfaces for the functional failure analysis of a thermal-hydraulic passive system”, *Proceedings of the 10th International Probabilistic Safety Assessment & Management (PSAM) 2010 Conference*, Seattle, Washington (USA), 7-11 June 2010, Volume 4, pp. 3161-3172, IAPSAM & ESRA, Printed by Curran Associates, Red Hook, NY USA, ISBN: 978-162276578-2.
- 2010** 81. E. Zio, N. Pedroni, “Subset Simulation and Line Sampling for Advanced Monte Carlo Reliability Analysis”, in: R. Bris, C. Guedes Soares and S. Martorell. (Eds.), *Safety, Reliability and Risk Analysis: Theory and Applications - Proceedings of the European Safety and RELiability (ESREL) 2009 Conference*,

	Prague, Czech Republic, 6-10 September 2009, pp. 687-694, Taylor & Francis Group, London, United Kingdom, 2010, ISBN 978-0-415-55509-8, DOI: 10.1201/9780203859759.ch94.
2009	82. E. Zio, N. Pedroni, "Reliability Analysis of Discrete Multi-State Systems by Means of Subset Simulation", in: S. Martorell, C. Guedes Soares, J. Barnett (Eds.), <i>Safety, Reliability and Risk Analysis: Theory, Methods and Applications - Proceedings of the European Safety and RELiability (ESREL) 2008 Conference</i> , Valencia, Spain, 22-25 September 2008, pp. 709-716, Taylor & Francis Group, London, United Kingdom, 2009, ISBN 978-0-415-48513-5.
2008	83. E. Zio, N. Pedroni, M. Broggi, L. Golea, "Locally Recurrent Neural Networks for Nuclear Dynamics Modelling", in: D. Ruan, J. Montero, J. Lu, L. Martinez, P. D' Hondt, E.E. Kerre (Eds.), <i>Computational Intelligence in Decision and Control - Proceedings of the 8th International Fuzzy Logic and Intelligent Technologies in Nuclear Science (FLINS) 2008 Conference</i> , Madrid, Spain, 21-24 September 2008, pp. 367-372, World Scientific Publishing, Singapore, Singapore, 2008, ISBN 978-981-279-946-3, DOI: 10.1142/9789812799470_0060.
2008	84. E. Zio, M. Broggi, L. Golea, N. Pedroni, "Predicting Reliability by Recurrent Neural Networks", in: B.A. Schrefler, and U. Perego (Eds.), <i>Proceedings of the 8th World Congress on Computational Mechanics (WCCM8) – 5th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2008)</i> , 30 June – 5 July 2008, Venice, Italy, p. 101 (abstract), International Centre for Numerical Methods in Engineering (CIMNE), Barcelona, Spain, 2008, ISBN 978-84-96736-55-9.
2007	85. F. Cadini, E. Zio, N. Pedroni, "Dynamic Systems Modelling by Locally Recurrent Neural Networks", in: T. Aven & J.E. Vinnem (Eds.), <i>Risk, Reliability and Societal Safety - Proceedings of the European Safety and RELiability (ESREL) 2007 Conference</i> , Stavanger, Norway, 25-27 June 2007, pp. 395-403, Taylor & Francis Group, London, United Kingdom, 2007, ISBN-13 978-0-415-44786-7.
2006	86. E. Zio, P. Baraldi, N. Pedroni, "Feature Selection for Transients Classification by a Niche Pareto Genetic Algorithm", in: D. Ruan, P. D' Hondt, P. Fantoni, M. De Cock, M. Nachtgeael, E.E. Kerre (Eds.), <i>Applied Artificial Intelligence - Proceedings of the 7th International Fuzzy Logic and Intelligent Technologies in Nuclear Science (FLINS) Conference</i> , Genova, Italy, 29-31 August 2006, pp. 938-945, World Scientific Publishing, Singapore, Singapore, 2006, ISBN 978-981-256-690-4.
Publications on proceedings of "summer school" and "workshop" (1)	
2007	87. F. Cadini, E. Zio, N. Pedroni, "Recurrent Neural Networks for Dynamic Reliability Analysis", In: E. Zio, K. Kolowrocky (Eds.), <i>Proceedings of the 1st Summer Safety and Reliability Seminars (SSARS) 2007</i> , Gdansk-Sopot, Poland, 22-29 July 2007, Vol. 1, pp. 45-53, Polish Safety and Reliability Association, Gdansk, Poland, 2007, ISBN 978-83-925436-0-2.
Contributions in international scientific books (5)	
2018	88. P. Turati, N. Pedroni, E. Zio, "Knowledge-driven System Simulation for Scenario Analysis in Risk Assessment", In: T. Aven, E. Zio (Eds.), <i>Knowledge in Risk Assessment and Management</i> , First Edition, pp. 165-220, John Wiley & Sons Ltd, 2018.
2010	89. E. Zio, N. Pedroni, "Reliability Estimation by Advanced Monte Carlo Simulation", In: J. Faulin, A.A. Juan, S. Martorell, J.E. Ramirez-Marquez (Eds.), <i>Simulation Methods for Reliability and Availability of Complex Systems</i> (Springer series in <i>Reliability Engineering</i>), pp. 3-39, Springer-Verlag, London, United Kingdom, 2010, ISBN 978-1-84882-212-2, DOI: 10.1007/978-1-84882-213-9_1.
2009	90. F. Cadini, E. Zio, N. Pedroni, "Nuclear Dynamics Modelling by Recurrent Neural Networks", in: A.L. Zenfora (Ed.), <i>Encyclopedia of Energy Research and Policy</i> , pp. 675-729, Nova Science Publishers, Hauppauge, New York (USA), 2009, ISBN 978-1-60692-161-6.
2008	91. F. Cadini, E. Zio, N. Pedroni, "Nuclear Dynamics Modelling by Recurrent

- Neural Networks”, in: V.B. Durelle (Ed.), *Nuclear Energy Research Progress*, pp. 7-62, Nova Science Publishers, Hauppauge, New York (USA), 2008 - 3rd quarter, ISBN 978-1-60456-365-8.
- 2008 92. E. Zio, P. Baraldi, G. Gola, N. Pedroni, “Fault Classifiers Based on Features Selected by Multi-Objective Genetic Algorithms”, in: B.C Arnold, N. Balakrishnan, J.M. Sarabian, R. Minguez (Eds.), *Advances in Mathematical and Statistical Modeling* (Springer series in *Statistics for Industry and Technology*), pp. 317-328, Birkhauser, Boston, Massachusetts (USA), 2008, ISBN 978-0-8176-4625-7, DOI: 10.1007/978-0-8176-4626-4_24.

Works published as official technical reports of international research institutes (5)

- 2014 93. E. Zio, N. Pedroni, “Possibilistic methods for uncertainty treatment applied to maintenance policy assessment”, Number 2014-07 of the *Cahiers de la Sécurité Industrielle*, Foundation for an Industrial Safety Culture, Toulouse, France, 2014, ISSN 2100-3874. Available at <http://www.FonCSI.org/en/cahiers/>
- 2013 94. E. Zio, N. Pedroni, “Case studies in uncertainty propagation and importance measure assessment”, Number 2013-12 of the *Cahiers de la Sécurité Industrielle*, Foundation for an Industrial Safety Culture, Toulouse, France, 2013, ISSN 2100-3874. Available at <http://www.FonCSI.org/en/cahiers/>
- 2013 95. E. Zio, N. Pedroni, “Literature review of methods for representing uncertainty”, Number 2013-03 of the *Cahiers de la Sécurité Industrielle*, Foundation for an Industrial Safety Culture, Toulouse, France, 2013, ISSN 2100-3874. Available at <http://www.FonCSI.org/en/cahiers/>
- 2012 96. E. Zio, N. Pedroni, “Overview of risk-informed decision-making processes”, Number 2012-10 of the *Cahiers de la Sécurité Industrielle*, Foundation for an Industrial Safety Culture, Toulouse, France, 2012, ISSN 2100-3874. Available at <http://www.FonCSI.org/en/cahiers/>
- 2012 97. E. Zio, N. Pedroni, “Uncertainty characterization in risk analysis for decision-making practice”, Number 2012-07 of the *Cahiers de la Sécurité Industrielle*, Foundation for an Industrial Safety Culture, Toulouse, France, 2012, ISSN 2100-3874. Available at the website: <http://www.FonCSI.org/fr/cahiers/>

PARTICIPATION TO INTERNATIONAL CONFERENCES, WORKSHOPS & SEMINARS

- 2020 • 30th European Safety and Reliability Conference and the 15th Probabilistic Safety Assessment and Management Conference 2020, 1-5 November 2020, Venice (Italy). Oral presentation of two papers: 1) V. Destino, R. Bonifetto, N. Pedroni, L. Savoldi, F. Di Maio, E. Zio, “Advanced Methods for Loss-Of-Flow Accident Precursors Identification in a Superconducting Magnet Cryogenic Cooling Circuit”; 2) N. Pedroni, “Computational Methods for System Optimization Under Uncertainty”.
- 2019 • 3rd International Conference on Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP) 2019, 24-26 June 2019, Crete, Greece. Co-organizer of the Mini-Symposium “Surrogate models: benchmark problems and solutions”.
- 2018 • European Safety and RELiability Conference (ESREL) 2018, June 17-21, 2018, Trondheim, Norway. Oral presentation of the paper: R. Bellaera, R. Bonifetto, F. Di Maio, N. Pedroni, L. Savoldi, R. Zanino, E. Zio, “Integrated Deterministic and Probabilistic Safety Assessment of the Cooling Circuit of a Superconducting Magnet for Nuclear Fusion Applications”.
- 2018 • ESRA Technical Chair Workshop “Creating Excellence”, supported by ESRA (European Reliability and Safety Association) and SRA (Society of Risk Analysis), Arzachena, Italy, 1-3 June 2018.
- 2017 • The 2017 International Topical Meeting on Probabilistic Safety Assessment and Analysis (PSA 2017), Pittsburgh, PA, USA, September 24-28, 2017. Oral presentation of the paper: T. Bani-Mustafa, N. Pedroni, E. Zio, D. Vasseur, F. Beaudouin, “A hierarchical tree-based decision making approach for assessing the trustworthiness of risk assessment models”.

2017	<ul style="list-style-type: none"> • SET-Nav workshop on “Modelling of Risk & Uncertainty in Energy Systems”, organized by the SET-Nav (www.set-nav.eu) consortium and hosted by the Reliability and Risk Engineering (RRE) lab and the Energy Science Center (ESC) at ETH Zurich, Zurich, Switzerland, on March 29th 2017. Invited seminar titled “Uncertainty representation and propagation in the models of energy systems for risk, vulnerability and resilience assessment purposes”.
2016	<ul style="list-style-type: none"> • European Safety and RELiability Conference (ESREL) 2016, Glasgow, Scotland, 25-29 September 2016. Participation and submission of one paper.
2015	<ul style="list-style-type: none"> • European Safety and RELiability Conference (ESREL) 2015, Zurich, Switzerland, 7-10 September 2015. Oral presentation of the paper: N. Pedroni, E. Zio, “Estimating the small failure probability of a nuclear passive safety system by means of an efficient Adaptive Metamodel-Based Subset Importance Sampling method”.
2014	<ul style="list-style-type: none"> • Second International Conference on Vulnerability and Risk Analysis and Management (ICVRAM2014) & Sixth International Symposium on Uncertainty Modelling and Analysis (ISUMA2014), University of Liverpool, Liverpool, UK, 13-16 July 2014. Participation and submission of two papers.
2014	<ul style="list-style-type: none"> • Séminaire Francilien de Sécurité de Fonctionnement, organized by the Groupe de travail de l’Institut de Maitrise des Risques (IMdR), at Ecole Centrale Paris, Chatenay-Malabry, France, 06 June 2014. Seminar titled “Efficient Methods for Treating Uncertain Variables in Risk Assessment Models”. Available at: http://www.lix.polytechnique.fr/~rauzy/seminaire/sdfx-sceances-tenues.htm#2014-06-06
2014	<ul style="list-style-type: none"> • Young Researcher Workshop on “The Future of Reliability and Risk Analysis”, supported by ESRA (European Reliability and Safety Association) and SRA (Society of Risk Analysis), Ragusa, Italy, 26-27 May 2014. Invited seminar titled: “Considerations on the treatment of uncertainty in risk assessment, in the presence of ‘extreme’ events”.
2013	<ul style="list-style-type: none"> • European Safety and RELiability Conference (ESREL) 2013, Amsterdam, The Netherlands, 29 September-2 October 2013. Oral presentation of the paper: N. Pedroni, E. Zio, A. Pasanisi, M. Couplet, “Bayesian probabilistic analysis of a nuclear power plant small loss of coolant event tree model with possibilistic parameters”.
2012	<ul style="list-style-type: none"> • Seminar organized by the Department of Research & Development (R&D) – Management des Risques Industriels (MRI) of the Electricité de France (EdF), Clamart, France, 11 December 2012. Seminar title: “Representing and Modeling Uncertainty in the Risk Assessment of Engineering Systems”.
2012	<ul style="list-style-type: none"> • Second seminar of the “Institut des Sciences du Risque et de l’Incertain (ISRI)” & “Chaire sur les Sciences de Système et Défis Energétiques (SSDE)”-European Foundation for New Energy-Electricité de France, Chatenay-Malabry, France, 29 November 2012. Seminar title: “Representing and Modeling Uncertainty in the Risk Assessment of Engineering Systems”.
2012	<ul style="list-style-type: none"> • Seminar organized by the “Fondation pour une Culture de Sécurité Industrielle (FonCSI)” (Toulouse, France) within the contract “Quantitative methods of uncertainty representation and modelling in risk analysis for decision-making practice”, Politecnico di Milano, Milano, Italy, 15-16 November 2012. Seminar titled: “Bayesian updating of the possibilistic parameters of aleatory probability distributions in risk assessment: an application”.
2012	<ul style="list-style-type: none"> • 5th International Conference on Safety & Environment in Process & Power Industry (CISAP-5), Milano, Italy, 3-6 June 2012. Oral presentation of the paper: “Failure and Reliability Predictions by Locally Recurrent Neural Networks”.
2012	<ul style="list-style-type: none"> • Seminar organized by the “Fondation pour une Culture de Sécurité Industrielle (FonCSI)” (Toulouse, France) within the contract “Quantitative methods of uncertainty representation and modelling in risk analysis for decision-making practice”, Technical University of Berlin (TUB), Berlin, Germany, 23-24 February 2012. Seminar titled “Decision-making in presence of uncertainties: an application”.
2011	<ul style="list-style-type: none"> • Workshop on “Uncertainty and Risk Quantification”, held at the School of Engineering of the University of Liverpool, 2-3 December 2011. Oral presentation titled “The problem of uncertainty in system risk assessment”.

2011	<ul style="list-style-type: none"> • European Safety and RELiability (ESREL) 2011 Conference, Troyes, France, 18-23 September 2011. Oral presentation of the paper: P. Baraldi, N. Pedroni, E. Zio, E. Ferrario, A. Pasanisi, M. Couplet, “Monte Carlo and fuzzy interval propagation of hybrid uncertainties on a risk model for the design of a flood protection dike”.
2011	<ul style="list-style-type: none"> • Seminar organized by the “Fondation pour une Culture de Sécurité Industrielle (FonCSI)” (Toulouse, France) within the contract “Quantitative methods of uncertainty representation and modelling in risk analysis for decision-making practice”, Institut d’Etudes Politiques (IEP), Lyon, France, 11-12 July 2011. Seminar titled “Quantitative methods of uncertainty representation and modeling in risk analysis for decision-making practice”.
2010	<ul style="list-style-type: none"> • 6th International Conference on Sensitivity Analysis of Model Output (SAMO), Milano, Italy, 19-22 July 2010. Oral presentation of the paper: E. Zio, N. Pedroni, “Sensitivity analysis of the model of a nuclear passive system by means of Subset Simulation”.
2010	<ul style="list-style-type: none"> • 10th International Probabilistic Safety Assessment & Management (PSAM) Conference, Seattle, Washington (USA), 7-11 June 2010. Oral presentation of the paper: G.E. Apostolakis, N. Pedroni, E. Zio, “Artificial Neural Networks and quadratic Response Surfaces for the functional failure analysis of a thermal-hydraulic passive system”.
2010	<ul style="list-style-type: none"> • Seminar organized by the “Fondation pour une Culture de Sécurité Industrielle (FonCSI)” (Toulouse, France) within the contract “Quantitative methods of uncertainty representation and modelling in risk analysis for decision-making practice”, École Nationale des Travaux Publics de l’État (ENTPE), Lyon, France, 8-9 April 2010. Seminar titled “Uncertainty characterization in risk analysis for decision making practice”.
2009	<ul style="list-style-type: none"> • European Safety and RELiability (ESREL) 2009 Conference, Prague, Czech Republic, 6-10 September 2009. Oral presentation of the paper: E. Zio, N. Pedroni, “Subset Simulation and Line Sampling for Advanced Monte Carlo Reliability Analysis”.
2009	<ul style="list-style-type: none"> • 2nd International Forum on Industrial Safety, held at the Politecnico di Milano (Milano, Italy), 08-10 July 2009, organized by the “Fondazione Politecnico di Milano” and the “Fondation pour une Culture de Sécurité Industrielle (FonCSI)” (Toulouse, France).
2009	<ul style="list-style-type: none"> • Two-hour seminar titled “Advanced Monte Carlo Simulation Methods for Uncertainty and Sensitivity Analysis in Probabilistic Risk Assessment”, held at the Research and Development Department of the US Nuclear Regulatory Commission (NRC), Church Street CSB 6B1, Rockville, Maryland (USA), January 19, 2009.
2008	<ul style="list-style-type: none"> • 8th World Congress on Computational Mechanics (WCCM8) – 5th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2008), Venice, Italy, June 30 – July 5, 2008. Oral presentation of the paper: E. Zio, M. Broggi, L. Golea, N. Pedroni, “Predicting Reliability by Recurrent Neural Networks”.
2007	<ul style="list-style-type: none"> • 1st Summer Safety and Reliability Seminars (SSARS) 2007, Gdansk-Sopot, Poland, 22-29 July 2007. Oral presentation of the paper: F. Cadini, E. Zio, N. Pedroni, “Recurrent Neural Networks for Dynamic Reliability Analysis”.
2006	<ul style="list-style-type: none"> • 7th International Fuzzy Logic and Intelligent Technologies in Nuclear Science (FLINS) Conference on Applied Artificial Intelligence, Genova, Italy, 29-31 August 2006. Oral presentation of the paper: E. Zio, P. Baraldi, N. Pedroni, “Feature Selection for Transients Classification by a Niche Pareto Genetic Algorithm”.

LANGUAGES

- **Italian:** native language.
- **English:** very good, both written and oral (professional working proficiency, at least).
- **French:** Acquired Level B2.1 of the Common European Framework of Reference for Languages (CEFR).

AWARDS AND SCHOLARSHIPS

- | | |
|--------------------------|--|
| March 2018 | <ul style="list-style-type: none">• Outstanding Reviewer 2018 for the ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering. |
| March 2015 | <ul style="list-style-type: none">• Outstanding Reviewer 2014 for the ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering. |
| December 11, 2011 | <ul style="list-style-type: none">• “Premio giovani ricercatori”: prize for the most consistent scientific production in 2010 among the young researchers of the Nuclear Division of the Energy Department of the Politecnico di Milano (Milano, Italy). |
| June 25, 2008 | <ul style="list-style-type: none">• Progetto Roberto Rocca Visiting Student Fellowship for the Fall 2008 and Spring 2009 semesters at MIT – The award is one of the activities funded by the Progetto Rocca, which promotes collaborations and exchanges between MIT and the Politecnico di Milano. |
| February 28, 2008 | <ul style="list-style-type: none">• Student’s congress scholarship covering the registration fee for the 8th World Congress on Computational Mechanics (WCCM8) – 5th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2008), June 30 – July 5, 2008, Venice, Italy. |
| January 2007 | <ul style="list-style-type: none">• Awarded of a scholarship from the Italian Ministry of Education for supporting the three-year PhD studies in “Radiation Science and Technology” at the Energy Department of the Politecnico di Milano (Milano, Italy), 2007-2010. |
| December 2006 | <ul style="list-style-type: none">• Gold Medal Award, Best Graduate Student of the Year in Nuclear Engineering – Politecnico di Milano (Milano, Italy). |

COMPUTER SKILLS

- Operating Systems: Ms-Dos; Windows 9X, NT, ME, 2000, XP, Vista, W7, W10.
- Programming languages: Fortran 77/90, Matlab®, C (notions).
- Softwares: Office (Word, Excel, PowerPoint, Outlook); OpenOffice.org Suite; Acrobat, Winedt, Gsview; Matlab® (and Tools).

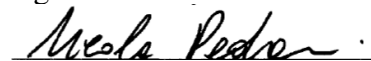
HOBBIES AND INTERESTS

Cinema, Visiting museums and art galleries, Watching sports, Swimming.

Autorizzo il trattamento dei dati personali ai sensi del D.Lgs 196/2003

Date: 30 July 2021

Signature



(Nicola Pedroni)