

Antonio Froio

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Bio

Born in Catanzaro, IT
on 25/11/1990
Address: Via A. Fogazzaro, 11
10145 Torino

SKILLS

IT

PROGRAMMING

Java • MATLAB • \LaTeX
C • C++ • bash • Modelica
Python

SOFTWARE

Microsoft Office • LibreOffice
Dymola • OpenModelica

OS

Linux • Windows
Android

PERSONAL

Excellent capability to work a in
multicultural and
multidisciplinary team.

Good ability to organize a
long-term work.

High versatility, working
simultaneously on different subjects.

Strongly logical reasoning.

Passionate for research.

LANGUAGES

Italian • English

EXPERIENCE

POLITECNICO DI TORINO | ASSISTANT PROFESSOR

Aug 2018 – Jul 2021 | Torino, IT

Assistant professor of Nuclear Engineering thermal-hydraulics.

Research on thermal-hydraulics for the Balance-of-Plant of the EU DEMO tokamak under a EUROfusion Engineering Grant.

Main developer of the GETTHEM code.

Lecturer in the courses "Laboratorio computazionale di scambio termico",

"Introduction to computational heat transfer" and "Nuclear fusion reactor engineering".

POLITECNICO DI TORINO | POST-DOC

Mar 2018 – Jul 2018 | Torino, IT

Thermal-hydraulic analyst for the Breeding Blanket of the EU DEMO tokamak.

Analyses of operational and accidental transients.

POLITECNICO DI TORINO | PHD STUDENT

Nov 2014 – Mar 2018 | Torino, IT

PhD thesis on the development from scratch of a system-level thermal-hydraulic model for the EU DEMO fusion power reactor.

Main activities:

- Identification of the model requirements
- Implementation of the model using the high-level Modelica language
- Validation of the model through benchmark with existing codes and experimental data

POLITECNICO DI TORINO | TEACHING ASSISTANT

Sep 2016 – Jul 2018 | Torino, IT

Assistant for the MSc course "Introduction to computational heat transfer": frontal lecturer during both lab sessions and classroom lectures.

Course taught in English to 300+ students.

POLITECNICO DI TORINO | TEACHING ASSISTANT

Sep 2015 – Jul 2015 | Torino, IT

Assistant for the MSc course "Introduction to computational methods for energy applications": frontal lecturer during lab sessions.

Course taught in English to 100+ students.

POLITECNICO DI TORINO | TEACHING ASSISTANT

Sep 2013 – Jan 2014 | Torino, IT

Assistant for the MSc course "Computational methods for energy applications and for thermo-fluid dynamics": provide assistance to students during lab sessions.

EDUCATION

POLITECNICO DI TORINO | MSc IN ENERGY AND NUCLEAR ENGINEERING

Sep 2012 – Jul 2014 | Torino, IT

Career: Nuclear Technologies and Applications | Final grade: 110/110 cum laude

ALTA SCUOLA POLITECNICA

Mar 2013 – Dec 2014 | Milano, IT and Torino, IT

Team project on "A system for three-dimensional face comparison aimed at medically diagnosing rare diseases involving face dysmorphisms"

POLITECNICO DI MILANO | MSc IN NUCLEAR ENGINEERING

Dec 2014 | Milano, IT

Double degree as part of the ASP programme.

UNIVERSITÀ DELLA CALABRIA | BSc IN MECHANICAL ENGINEERING

Sep 2009 – Sep 2012 | Arcavacata di Rende, IT

Final grade: 110/110 cum laude

PUBLICATIONS

L. Forest, *et al.*, *Status of the EU DEMO breeding blanket manufacturing R&D activities*, **Fusion Engineering and Design** 152:111420, 2020

M. Cagnoli, *et al.*, *Multi-scale modular analysis of open volumetric receivers for central tower CSP systems*, **Solar Energy** 190:195–211, 2019

A. Froio, *et al.*, *Analysis of the flow distribution in the Back Supporting Structure manifolds of the HCPB Breeding Blanket for the EU DEMO fusion reactor*, **Fusion Science and Technology** 75(5): 365–371, 2019

A. Del Nevo, *et al.*, *Recent progress in developing a feasible and integrated conceptual design of the WCLL BB in EUROfusion project*, **Fusion Engineering and Design**, in press

A. Froio, *et al.*, *Parametric thermal-hydraulic analysis of the EU DEMO Water-Cooled Lithium-Lead First Wall using the GETTHEM code*, **Fusion Engineering and Design** 137:257–267, 2018

F. Cismondi *et al.*, *Progress in EU Breeding Blanket design and integration*, **Fusion Engineering and Design** 136(A):782–792, 2018

A. Bertinetti, *et al.*, *Hydraulic Modeling of a Segment of the EU DEMO HCPB Breeding Blanket Back Supporting Structure*, **Fusion Engineering and Design** 136(B):1186–1190, 2018

A. Froio, *et al.*, *Modelling an In-Vessel Loss of Coolant Accident in the EU DEMO WCLL Breeding Blanket with the GETTHEM Code*, **Fusion Engineering and Design** 136(B):1226–1230, 2018

A. Froio, *et al.*, *Thermal-Hydraulic Analysis of the EU DEMO Helium-Cooled Pebble Bed Breeding Blanket Using the GETTHEM Code*, **IEEE Transactions on Plasma Science** 45(5):1436–1445, 2018

D. Conti, *et al.*, *Landmarking-based unsupervised clustering of human faces manifesting labio-schisis dysmorphisms*, **Informatica** 41(4):507–516, 2017

A. Froio, *et al.*, *Benchmark of the GETTHEM Vacuum Vessel Pressure Suppression System (VVPSS) model for a helium-cooled EU DEMO blanket*, in **Safety and Reliability** 59–66, 2017

A. Froio, *et al.*, *Dynamic thermal-hydraulic modelling of the EU DEMO WCLL breeding blanket cooling loops*, **Fusion Engineering and Design** 124:887–891, 2017

L. Bonacina, *et al.*, *Automatic 3D foetal face model extraction from ultrasonography through histogram processing*, **Journal of Medical Ultrasound** 24(4):142–149, 2016

A. Froio, *et al.*, *Dynamic thermal-hydraulic modelling of the EU DEMO HCPB breeding blanket cooling loops*, **Progress in Nuclear Energy** 93:116–132, 2016

A. Froio, *et al.*, *Design and optimization of Artificial Neural Networks for the modelling of superconducting magnets operation in tokamak fusion reactors*, **Journal of Computational Physics** 321:476–491, 2016

A. Froio, *et al.*, *Artificial Neural Networks: a viable tool to design heat load smoothing strategies for the ITER Toroidal Field coils*, in **IOP Conference Series: Materials Science and Engineering** 101(1):012149, 2015

L. Savoldi Richard, *et al.*, *Artificial Neural Network (ANN) modeling of the pulsed heat load during ITER CS magnet operation*, **Cryogenics** 63:231–240, 2014

PATENTS

A. Froio, *et al.*, *A computer based method for classifying a mass of an organ as a cyst*, P3068IT00, 2019

L. Bonacina, *et al.*, *Process for processing medical images of a face for recognition of facial dysmorphisms*, WO/2017/089953, 2015