First name Matteo
Surname D'Onorio

Present Working Position

Position Research Fellow

Address University of Rome "La Sapienza" – DIAEE
C.so Vittorio Emanuele II, 244 00186 Roma (Italy)

Grant Award EUROfusion Engineering Grant: EU DEMO nuclear safety analyses

Research topics
- Severe accident in nuclear facilities
- Modelling of multi-physics phenomena in nuclear reactors
- Uncertainty quantification

Work experience

Start	End	Institution	Position
Nov. 2016	March 2019	ELIS – Consulting & Labs	Data Scientist
5 June 2017	16 June 2017	China-EU Institute for Clean and Renewable Energy at Huazhong University of Science & Technology, Wuhan (China)	Visiting Lecturer-Course: "Energy conversion and grid control"
March 2015	Sept. 2015	Commissariat à l'énergie atomique et aux énergies alternatives (CEA) - Laboratoire d'Études et de Développement de Coeur - Cadarache (France).	Research Engineer Intern

Education and Training

Graduation Ph.D. in Energy and Environment
Nov. 2016 – Feb. 2020 University of Rome "La Sapienza"

Ph.D. Thesis Safety Analyses with uncertainty quantification for fusion and fission nuclear power plants. Applications to EU DEMO fusion reactor and BWRs.

Graduation MSc Degree in Energy and Nuclear Engineering
Oct. 2013 – May 2016 University of Rome "La Sapienza" – Mark: 110/110 cum laude.

Thesis Analysis of lattice deformations impact on microscopic cross sections value and on core reactivity in a Sodium Fast Reactor.

Courses with related cfu Risk analysis for industrial plants (6), Safety Systems of Nuclear Power Plants (6), Design of Nuclear Power Plants (9), Instrumentation and Control of Nuclear Power Plants (9), Radioprotection (9), Reactor Physics (9), Thermal Power Plants (6), Fluid-dynamics (6), Nuclear Physics (9), Plasma Physics (6), Electrical Motors and Generators (9), Electrical Networks (9)

Graduation Bachelor's Degree in Energy Engineering
Oct. 2010 – July 2013 University of Rome "La Sapienza" – Mark: 109/110

Thesis Passive Safety System in Nuclear Power Plants. The AP1000 Reactor.

Courses with related cfu	Advanced Thermo-hydraulics (9), Elements of Safety for Energetic Engineering (6), Energetics and Heat Transfer (12), Elements of Nuclear Power Plants (6), Numerical Analysis (6), Energy Systems (9), Combustion Chemistry (6), Turbomachinery (9), Combined Cycles (9), Instrumentation and Control of Power Plants Power Plants (9), Electromagnetism (9), Structural Mechanics (9), Engineering Drawing (6), Geometry (9), Chemistry (9), Calculus (9), Multivariable Calculus and Differential Equations (9), Materials Science and Technology (9), Mechanics and Thermo-dynamics (9)

Language Skills

Italian	Mother tongue
English	Upper Intermediate B2
French	Elementary level A1

Scientific Skills

Mathematical and analytical skills, Problem solving, Thermal-hydraulics, Numeric Analysis, Monte Carlo Analysis, Nuclear Reactor Physics, Safety and Risk analysis, skills in writing and editing for engineering reports.

Informatic Skills

- Advanced command of code for simulating nuclear related and thermal hydraulics phenomena (MELCOR, MCNP, ERANOS, SERPENT)
- Advanced command of mathematical and analytical software (MATLAB, RAVEN)
- Programming languages: Python, Fortran , Visual Basic for Applications
- Advanced command of Microsoft Office pack

Publications

- M. D'Onorio et al., Pressure Suppression System influence on Vacuum Vessel thermal-hydraulics and on source term mobilization during a multiple First Wall – Blanket pipe break, *in press*
- M. D'Onorio et al., Benchmark analysis of in-vessel LOCA scenarios for code-to-code comparison, *in press*
- G. Mazzini, M. D'Onorio, Hydrogen Explosion Mitigation in DEMO Vacuum Vessel Pressure Suppression System using Passive Recombiners, *in press*
- Preliminary sensitivity analysis for an ex-vessel LOCA without plasma shutdown for the EU DEMO WCLL blanket concept, Fusion Eng. Des. 158 (2020), 111745
- M. D'Onorio et al. Preliminary safety analysis of an in-vessel LOCA for the EU-DEMO WCLL blanket concept, Fusion Eng. Des., 155 (2020), 111560
- M. D'Onorio et al., In-box LOCA accident analysis for the European DEMO water-cooled reactor, Fusion Eng. Des. 146 (2019) 732-735;
- M. D'Onorio, F. Giannetti, F. Mascari, G. Caruso. Uncertainty analyses using the RAVEN software tool coupled with MELCOR severe accident code. ANS Best Estimate Plus Uncertainty International Conference (BEPU 2018);
- N. Burgio, L. Cretara, M. D'Onorio, M. Frullini, A. Gandini, R. Gatto, A. Santagata. The Monte Carlo GPT methodology for the analysis of ratios of functionals bilinear with the real and adjoint neutron fluxes. Annals of Nuclear Energy

Technical reports

- G. Caruso, M. D'Onorio, "Beyond Design Basis accident analysis affecting BZ cooling loop in WCLL DEMO", EUROfusio WPSAE-2.023.1-T001-D014;
- G. Caruso, M. D'Onorio, "Final report on selected accident analyses 2019 by UNIROMA", EUROfusion WPSAE-2.022.1-T001-D024;
- G. Caruso, M. D'Onorio, "Development of the TBM and Ancillary systems models", WPSAE-5.2.1-T001-D003;

- G. Caruso, M. D'Onorio, "GSSR Vol. 8: Analysis of beyond design basis events", WPSAE-4.4.3-T001-D001-D002
- M. D'Onorio, G. Caruso, "Interim report on accident analyses to support the design of the VVPSS", EUROfusion WPSAE-2.023.1-T001-D07-2;
- M. D'Onorio, G. Caruso, "Hydrogen and dust explosion mitigation" EUROfusion WPSAE-2.024.1-T01-D03-D04;
- M. D'Onorio, G. Caruso, "LOFA BDBA scenario analyses in WCLL blanket" EUROfusion WSAE-2.022.1-T001-D019-4
- M. D'Onorio, G.Caruso, "Interim report on selected accident analyses on WCLL" EUROfusion WPSAE-2.022.1-T001-D019-3
- M. D'Onorio, G. Caruso, F. Giannetti, "Interim report on accident analyses: Loss of coolant in FW and BB cooling loops",EUROfusion WPSAE-2.22.1-T001-D013;
- M. D'Onorio, G. Caruso, F. Giannetti, M. Frullini. "Interim report on accident analyses: WCLL blanket in-box LOCA", EUROfusion WPSAE-2.22.1- T01-D07;
- F. Mascari, M. D'Onorio, F. Giannetti, G. Caruso, A. Naviglio. "Analisi di transitori non mitigati: perdita di refrigerante da piccola rottura in PWR, perdita d'acqua di alimento del GV in PWR e SBO in BWR", ADPFISS-LP1-103;
- Maria Teresa Porfiri, Guido Mazzini, Matteo D'Onorio, Fabio Giannetti, G. Caruso. "Solutions to minimize in-vessel hydrogen and hydrogen/dust explosions: proposal and study", EUROfusion WPSAE – 2.24.1 D01-T01;
- M. Nobili, G. Caruso, F. Giannetti, M. D'Onorio. "Interim report on parametric accident analyses: LOFA in WCLL blanket", EUROfusion WPSAE-2.23.1-T01-D01