Matteo D'Onorio

● WORK EXPERIENCE

06/2023 – CURRENT Rome, Italy
RESEARCHER - RTDA UNIVERSITY OF ROME LA SAPIENZA, DEP. OF ASTRONAUTIC, ELECTRIC AND ENERGY ENGINEERING

Main education research topics:

1. Severe accidents in nuclear facilities
2. Plant Control and Monitoring Systems
3. Modeling of multi-physics phenomena in nuclear reactors
4. Sensitivity and Uncertainty quantification
5. System codes virtual control

11/2019 – 05/2023 Rome, Italy
UNIVERSITY RESEARCH FELLOW UNIVERSITY OF ROME LA SAPIENZA, DEP. OF ASTRONAUTIC, ELECTRIC AND ENERGY ENGINEERING

10/2016 – 28/02/2018 Rome, Italy
DATA ANALYST ELIS

- **StorageLab** for **Terna S.p.A**.: Monitoring and managing the performance data of different storage technologies during both normal and critical operating conditions.
- **Quality of experience** for **Vodafone Italy:** Data management to create a correlation model between the quality of service and quality of experience; fine-tuning of the model with data extracted from customers; creation of a unique KPI to calculate customer satisfaction.

05/06/2017 – 16/06/2017 Wuhan, China
VISITING LECTURER IN COURSE "ENERGY CONVERSION AND GRID CONTROL" INSTITUTE FOR CLEAN AND RENEWABLE ENERGY, HUAZHONG UNIVERSITY OF SCIENCE & TECHNOLOGY, CHINA

03/03/2015 – 01/09/2015 Cadarache, France
RESEARCH INTERN COMMISSARIAT À L'ÉNERGIE ATOMIQUE (CEA)

Research activity on reactor physics based on 1D and 2D subassembly modeling to estimate changes in multi-group microscopic cross sections following lattice deformation.

02/2023 – CURRENT
LECTURER IN MASTER'S DEGREE COURSE "MONITORAGGIO E CONTROLLO DEI SISTEMI ENERGETICI" UNIVERSITY OF ROME LA SAPIENZA, DEP. OF ASTRONAUTIC, ELECTRIC AND ENERGY ENGINEERING

09/2022 – CURRENT
LECTURER IN MASTER'S DEGREE COURSE "LABORATORIO DI SIMULAZIONE DEGLI IMPIANTI NUCLEARI" UNIVERSITY OF ROME LA SAPIENZA, DEP. OF ASTRONAUTIC, ELECTRIC AND ENERGY ENGINEERING

● EDUCATION AND TRAINING

11/2019 – 10/2022 Garching, Germany
EUROFUSION ENGINEERING GRANT EUROfusion

Address Boltzmannstr. 2, 85748, Garching, Germany ｜ **Website** https://www.euro-fusion.org/ ｜

Field of study EU-DEMO nuclear safety analysis

11/2016 – 02/2020 Rome, Italy
PH.D. IN ENERGY AND ENVIRONMENT University of Rome "La Sapienza"

Address C.so Vittorio Emanuele II, 244, 00186, Rome, Italy ⎪ **Field of study** Nuclear Engineering ⎪

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

10/2010 – 07/2013 Rome, Italy
BACHELOR OF ENERGY ENGINEERING University La Sapienza of Rome, Italy

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)

National classification 109/110 ⎪ **Thesis** Passive Safety System in Nuclear Power Plants. The AP1000 Reactor.

09/2013 – 05/2016 Rome, Italy
MASTER OF NUCLEAR AND ENERGY ENGINEERING University La Sapienza

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)

Field of study Nuclear Engineering ⎪ **Final grade** 110/110 Cum laude ⎪ **National classification** 110/110 cum Laude ⎪

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

● LANGUAGE SKILLS

Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C1	C1	B2	C1	B2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

● ADDITIONAL INFORMATION

JOB-RELATED SKILLS

Job-related skills

1. Advanced command of Microsoft Office pack
2. Operative systems: advanced command of Microsoft Windows, advanced command of Linux based systems (Ubuntu and CentOS)
3. System codes: good knowledge of MELCOR code
4. CFD codes: basic knowledge of ANSYS CFX and OpenFOAM
5. Neutronic codes: good knowledge of MCNP, SERPENT, and ERANOS codes
6. Mathematical and analytical software: good command of MATLAB and RAVEN
7. Programming languages: Python, Visual Basic for Applications, Fortran

PROJECTS

SASPAM-SA : Safety Analysis of SMR with PAssive Mitigation strategies – Severe Accident Nuclear safety analysis of SMR

MUSA - Management and Uncertainties of Severe Accidents Assessment of the capability of severe accident codes when modeling reactor and spent fuel pool accident scenarios of GEN II, GEN III, and GEN III+ reactor designs

CURRENT
Work Package Safety And Environment - EUROFusion DEMO Systems Projects Deterministic Safety Analysis of EU-DEMO WCLL concept and of ITER Test Blanket Modules

PUBBLICATIONS

See SCOPUS profile:

TECHNICAL REPORTS

Technical reports

Link

ADDITIONAL INFORMATION

Research Grant

1. Start-up Grant winner ("Progetto di Avvio alla ricerca"), "Development of an innovative tool to perform a dynamic probabilistic risk assessment of nuclear power plants." awarded by the Sapienza University of Rome, 9 July 2021.
2. EUROfusion Engineering Grant (EEG) winner, "EEG-2019/08 - DEMO Nuclear Safety Analysis", awarded by EUROfusion Consortium, 20 December 2018

Honours and awards

European Nuclear Society High Scientific Council Ph.D. Award 2022 – Laureate title, awarded by European Nuclear Society, 25 November 2022

Co-supervisor for Ph.D. thesis

1. Tommaso Glingler, "Analisi di scenari incidentali di ITER Test Blanket Module Water Cooling System e del Water Cooled Lithium Lead Breeding Blanket concept of the EU-DEMO plant", (Supervisor Prof. G. Caruso)
2. Martina Molinari, "Sviluppo e validazione di modelli di produzione e trasporto dei prodotti di corrosione attivati in circuiti di refrigerazione di impianti a fusione di tipo tokamak", (Supervisor Prof. G. Caruso)

Co-supervisor for Master's Degree thesis

1. Ilaria Naclerio, Analysis of an In-Vessel LOCA for the DEMO fusion reactor with the use of MELCOR-FUS code, (Supervisor Prof. G. Caruso)
2. Andrea Maggiacomo, Analysis of Fukushima Daichii unit 4 spent fuel pool using MELCOR, (Supervisor Dr. F. Giannetti)
3. Adriano Evangelisti, Analisi termoidraulica di un sistema di abbattimento della pressione per reattori a fusione raffreddati ad elio, (Supervisor Prof. G. Caruso)
4. Franco Belletti Araque, Development of a preliminary computational model to characterize the chemical interaction between tungsten dust and steam/air in fusion reactors, (Supervisor Dr. F. Giannetti)
5. Tommaso Glingler, Development of Dynamic Event Tree tool for the Safety Assessment of Nuclear Power Plants, (Supervisor Prof. G. Caruso)
6. Emanuele Vigilante, Severe accident analysis of a Generic BWR/4 with MELCOR, (Supervisor Dr. F. Giannetti)
7. Fabio Bisello, Analisi di un incidente severo del tipo LFW in un reattore PWR 900MWe tramite il codice MELCOR 2.2, (Supervisor Dr. F. Giannetti)

Courses

1. FAST Nuclear Emergency Tools (FASTNET) SCHOOL, Bologna, Italy, 21-25 January 2019
2. Severe accident Phenomenology-2019 Short Course, Cadarache, France, 9-14 September 2019
3. MELCOR Users' Workshop 2022, Washington DC, USA, 13-17 June, 2022

Editorial Board participation

Member of the editorial board of the Latin American Applied Research (LAAR) journal, ISSN: 0327-0793 (paper version) - ISSN: 1851-8796 (digital version) - Subject Editor: Heat and Mass Transfer

Participation in International Conferences

1. Best Estimate plus Uncertainty International Conference (BEPU 2018), Lucca, Italy, May 13–18 2018 , "Uncertainty analyses using the
2. RAVEN software tool coupled with MELCOR severe accident code", oral presentation
3. 30th Symposium on Fusion Technology (SOFT), Giardini Naxos (ME), Italy, September 16–21 2018, "In-box LOCA accident analysis for the European DEMO water-cooled Reactor", poster presentation
4. 14th International Symposium on Fusion Nuclear Technology (ISFNT), Budapest, Hungary, September 22-27 2019, "Preliminary sensitivity analysis for an ex-vessel LOCA without plasma shutdown for the EU DEMO WCLL blanket concept", poster presentation
5. 14th International Symposium on Fusion Nuclear Technology (ISFNT), Budapest, Hungary, September 22-27 2019, "Preliminary safety analysis of an in-vessel LOCA for the EU-DEMO WCLL blanket concept", poster presentation
6. 19TH INTERNATIONAL TOPICAL MEETING ON NUCLEAR REACTOR THERMAL HYDRAULICS (NURETH 19), March 6-11 2022, "On the effectiveness of passive hydrogen mitigation system during a beyond design basis accident in a fusion DEMO plant", Oral presentation
7. IEEE Symposium on Fusion Engineering (SOFE), Denver, Colorado, USA, December 12–16 2021, "Dynamic Event Tree analysis as a tool for risk assessment in nuclear fusion plants using RAVEN and MELCOR", poster presentation
8. 38th UIT International Conference, June 20-22 2022, Gaeta, Italy, "Severe accident sensitivity and uncertainty estimation using MELCOR and RAVEN", oral presentation
9. 38th UIT International Conference, June 20-22 2022, Gaeta, Italy, "Analysis of Fukushima Daiichi unit 4 spent fuel pool using MELCOR", oral presentation
10. 32nd Symposium on Fusion Technology (SOFT), Dubrovnik, Croatia, September 18–23 2022, "Development of a MELCOR thermal-hydraulic model for the EU-DEMO Tokamak building and simulation of a large break LOCA", poster presentation