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 – Thermal sciences, energy technology, building physics and nuclear engineering; ING-IND/19 - Nuclear power plants.

EDUCATION AND ACADEMIC QUALIFICATIONS

March 2018	**National (Italian) Academic Qualification 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 11 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.
February 04, 2016	**National (French) Academic Habilitation to Direct the Research (HDR)** in the Scientific Sector 61 "Engineering Informatics, Automatics and Signal Processing". 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".
February 2016	**National (French) Academic Qualification to be an Assistant Professor (Maître des Conférences)** in the Scientific Sector 61 – Engineering Informatics, Automatics and Signal Processing. The habilitation has been conferred by the Conseil National des Universités (CNU) - French National University Board.
February 03, 2014	**National (Italian) Academic Qualification to be an Associate Professor** in the Scientific Disciplinary Area 09/C2 – Thermodynamics and Nuclear Engineering. The qualification has a validity of 6 years.
March 01, 2010	**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".
December 22, 2005	**(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".
July 24, 2003	**(First Level) Degree in Energetic 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".

RESEARCH ACTIVITY (PREVIOUS ACADEMIC POSITIONS)

January 1, 2016 – April 1, 2017	**Temporary Associate Professor** at the Electricité de France (EDF) Chair "System Science & Energetic Challenge" at **University Paris Saclay-École CentraleSupélec** (Chatenay-Malabry, France).
March 1, 2013 – December 31, 2015	**Assistant professor** at the Electricité de France (EDF) Chair "System Science & Energetic Challenge" at **University Paris Saclay-École CentraleSupélec** (Gif-Sur-Yvette, France).
June 01, 2010 – February 28, 2013	**Assistant professor** in Nuclear Power Plants at the Energy Department of the Politecnico di Milano (Milano, Italy). 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".
September – December 2012	**Visiting researcher** at the Laboratory of Industrial Engineering (LGI) of the Ecole Centrale Paris (ECP) (Chatenay-Malabry, France).

January 16 – May 31, 2010	**Research grant** at the Energy 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".
September 2008 – May 2009	**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".
March 16 – December 31, 2006	**Research grant** at 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".

RESEARCH INTERESTS

Study and development of computational methods for the risk, vulnerability and resilience assessment of safety-critical engineering systems (in particular, nuclear systems, interdependent infrastructures and power transmission networks): (i) advanced Monte Carlo Simulation methods for efficient reliability estimation; (ii) advanced computational methods for the Integrated Deterministic and Probabilistic Safety Assessment (IDPSA) of complex, dynamic engineering systems; (iii) methods for the vulnerability and resilience analyses of critical, interdependent infrastructures (e.g., complex network theory); (iv) theories and methods for uncertainty representation and propagation through physical-mathematical models (e.g., Probability, Evidence and Possibility Theories); (v) soft-computing techniques for empirical regression modeling (e.g., Artificial Neural Networks); (vi) techniques for solving nonlinear, constrained optimization problems (e.g., Genetic Algorithms); (vii) statistical techniques and artificial intelligence methods for the prompt (on-line) detection and diagnosis of faults in safety-critical systems (in particular, for energy production).

ORGANIZATIONAL ACTIVITIES AT THE INTERNATIONAL LEVEL
Editor for International Journals

2023-today	• Associate Editor of the International Journal *Frontiers in Nuclear Energy* – Section *"Nuclear safety"*.
2021-	• Topic Editor for the International Journal of *Energies*.
2016-today	• Associate Editor of the International *Journal of Risk and Reliability, Proceedings of the Institution of Mechanical Engineers, Part O*, May 2016-today.
2015-today	• Member of the Editorial Board of the International Journals *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering* and *Part B: Mechanical Engineering*.

Coordinator of technical-scientific areas at international conferences

2023	• Co-coordinator of the technical-scientific area "S.05: Artificial Intelligence, Meta-Modelling and Advanced Simulation for the Analysis of the Computer Models of Nuclear Systems", at the 2023 33rd European Safety and Reliability (ESREL) Conference, September 3-8, 2023, Southampton, UK.
2022	• Co-coordinator of the technical-scientific area "S.24: Artificial Intelligence, Meta-Modelling and Advanced Simulation for the Analysis of the Computer Models of Nuclear Systems" at the 2022 32nd European Safety and Reliability (ESREL) Conference, August 28-September 1, 2022, Dublin, Ireland.
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

2023	• Member of the Technical Programme Committee (TPC) of the 2023 33rd European Safety and Reliability (ESREL) Conference, September 3-8, 2023, Southampton, UK.
2022	• Member of the Technical Programme Committee (TPC) of the 6th International Conference on System Reliability and Safety 2022 (ICSRS 2022), Venice, Italy, November 23-25, 2022.
2022	• Member of the Technical Programme Committee (TPC) of the 2022 32nd European Safety and Reliability (ESREL) Conference, August 28-September 1, 2022, Dublin, Ireland.
2021	• Member of the Technical Programme Committee (TPC) of the 4th International Conference on Nuclear Power Plants: Structures, Risk, Control & Decommissioning NUPP 2021, 10-11 JUNE 2021: 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, June 21–26, 2020, Venice, 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

2006-today	Energies, Probabilistic Engineering Mechanics, Operations Research Perspectives, Quality and Reliability Engineering International, Advances in Mechanical Engineering, Journal of Earthquake Engineering, Computers & Industrial Engineering; Annals of Nuclear Energy; IEEE Transactions on Power Systems; Journal of Engineering Design; Applied Soft Computing; Risk Analysis; Mechanical Systems and Signal Processing; International Journal of Reliability and Safety; Applied Mathematical Modelling; ASCE-ASME Risk and Uncertainty in Engineering Systems; Part B. Mechanical Engineering; Journal of Aerospace Information Systems; ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering; IEEE Systems Journal; International Journal of Uncertainty, Fuzziness and Knowledge-based Systems; IEEE Transactions on Reliability; Proceedings of the Institution of Mechanical Engineers, Part O, Journal of Risk and Reliability; Computers and Structures; Aerospace Science and Technology; Statistics and Computing; Nuclear Engineering and Technology; Science and Technology of Nuclear Installations; Nuclear Engineering and Design; Reliability Engineering and System Safety.

Organization of International Master/PhD courses

October 2016	• Member of the organizing committee of the 5th 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 4th PhD School on "Vulnerability, risk and resilience of complex system and critical infrastructures", organized by École CentraleSupélec (Chatenay-Malabry, France) and Politecnico di Milano (Milano, Italy), 14-18 September 2015, CentraleSupélec, Chatenay-Malabry, France.

Thesis Jury Member

2023	• Internal member in the Committee of the PhD defense of Alberto Moscatello at the Energy Department (DENERG) of the Politecnico di Torino (Torino, Italy), defended on 18 May 2023.
2022	• Member and (external) reviewer in the Committee of the PhD defense of Riccardo Cocci, thesis of CentraleSupélec/Université Paris-Saclay, (Paris, France), defended on 3 November 2022.
2021	• Member and (external) examiner/reviewer in the Committee of the PhD defense of Alvaro Rollon de Pinedo, "Statistical Analysis of the results of numerical simulations of accidental situations in Pressurized Water Reactors", thesis of the Grenoble Alpes University, specialty "MEP: Mécanique des fluides Energétique, Procédés" (Grenoble, France), defended on 20 December 2021.

2021	• 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	• 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	• 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	• 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	• 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	• 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	• 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	• Internal member in the Committee of two PhD defenses at the Energy Department (DENERG) of the Politecnico di Torino (Torino, Italy), 25 and 26 July 2017.
2015-2016 and 2016-2017	• International Master in Nuclear Energy (MNE), Specialty Operations, 2015-2016. The MNE is run by a consortium of several academic institutions (Universitè 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).

Other (administrative) activities

2019-today	• 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	• Co-Chair of the European Safety and Reliability Association (ESRA) Technical Committee (TC) on "Simulation for Safety and Reliability Analysis".
2015	• Member of the Board of Laboratory of Laboratoire Genie Industriel (LGI) (Laboratory of Industrial Engineering), CentraleSupélec (Chatenay-Malabry, France).
2015	• 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	• 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.

(SELECTED) TEACHING ACTIVITY

2021-2024	• Responsible of the organization and activity of the (elective) course "Safety of Energy Plants" (40 hours) of the First Level graduation course in Energy Engineering, Politecnico di Torino (Torino, Italy). The activity has entailed 20h lectures, 12.5h exercise sessions and 12h exam.

2019-2021	• 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.
2019-2024	• 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 course in Energy and Nuclear Engineering, Politecnico di Torino (Torino, Italy). The activity has entailed 17h lectures, 18h exercise sessions and 12h exam.
2017-2018, 2018-2019	• 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.
2015 and 2016	• 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 2012-2019	• 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 (Universitè 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). The activity has entailed the organization of 5 (three-hour) lectures, 4 (three-hour) exercise sessions and 1 (three-hour) mid-term exam.
Since 2007	• Several lectures, exercise sessions, tutorials, projects and exams supervisions during professional training courses (28 hours), National and International Bachelor and Master courses (1271.5 hours) and National and International Ph.D. courses (74 hours). In the following areas: (i) Reliability, Availability, Maintenance and Safety techniques and their applications to engineered systems; (ii) computational methods for the representation and propagation of uncertainties through the mathematical models of engineered systems; (iii) thermodynamics and heat transfer in energy systems (e.g., nuclear reactors).

THESIS SUPERVISION
Bachelor Theses

June-October 2023	• Supervisor of four thesis projects of students graduated at Politecnico di Torino (Torino, Italy) in Energy Engineering.
September-October 2022	• Supervisor of twelve thesis projects of students graduated at Politecnico di Torino (Torino, Italy) in Energy Engineering.
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

July 2023-July 2024	• Supervisor of the thesis project titled "Development and implementation of intelligent techniques for the detection (and classification) of abnormal conditions in safety-critical systems", by Zhang Jiaxing, at Politecnico di Torino (Torino, Italy), Mechatronic Engineering.
April 2022-March 2023	• Co-Supervisor of the thesis project titled "Development of methods for the control and safety demonstration of Molten Salt Fast Reactors (MSFRs)", by Nicolò Caruso, at Politecnico di Torino (Torino, Italy), Energy and Nuclear Engineering, graduated with 110/110 cum laude.
April 2022-November 2022	• Co-Supervisor of the thesis project titled "Development and implementation of intelligent techniques for the detection (and classification) of abnormal conditions in safety-critical systems", by Gianluigi Pastore, at Politecnico di Torino (Torino, Italy), Energy and Nuclear Engineering, graduated with 105/110.
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	• Co-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	• Co-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 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 with 9.72/10.
PhD Theses	
November 2018-September 2022 (defended)	• 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), defended on 16 September 2022, 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 2018 (expected)	• 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-March 2016 (expected)	• Co-supervisor of the thesis project titled "Methods for accounting of uncertainties in system analysis and decision making" by Chung-Kung Lo, thesis of Ecole Centrale Paris (Chatenay-Malabry, France), 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 CentraleSupelec, Laboratoire Génie Industriel.

PARTICIPATION TO CONTRACTUAL WORKS AND PROJECTS

1 December 2022 – 30 November 2025	• Researcher officially enrolled within the team of Politecnico di Torino for the Spoke TS2 "Multi-Risk Resilience of Critical Infrastructures" of the RETURN (multi-Risk sciEnce for resilienT commUnities undeR a changiNg climate) Extended Partnership funded by the European Union Next-GenerationEU (National Recovery and Resilience Plan – NRRP, Mission 4, Component 2, Investment 1.3 – D.D. 1243 2/8/2022, PE0000005). Total cost of the project: euros 18.700.000,00.
September 2023 – September 2025	• Co-proponent and Scientific Responsible (for Politecnico di Torino) of the PRIN (Progetti di Ricerca di rilevante Interesse Nazionale) National (Italian) Funded Research Project titled "ARtificial Intelligence and STOchasTic simulation for the rEsiLience of critical infrastructurES (ARISTOTELES)", id: 2022TAFXZ5, 204048 euros. Other research units involved: Politecnico di Milano (Principal Investigator); Istituto Nazionale di Geofisica e Vulcanologia (co-proponent).
September 2023 – December 2025	• Participation to the activities of the Organization for Economic Co-operation and Development (OECD)/ Nuclear Energy Agency (NEA)/ Working Party on Scientific issues and Uncertainty Analysis of Reactor Systems (WPRS)/ Expert Group on Reactor Systems Multi-Physics (EGMUP) in the Task Force on "Artificial Intelligence (AI) and Machine Learning (ML) for Scientific Computing in Nuclear Engineering (NE)". Main activities: 1) enabling more trustable applications of ML/AI in NE addressing the verification, validation and uncertainty quantification (VVUQ) of AI/ML, data scarcity, scaling-induced uncertainty, and lack of physics in black-box ML models; 2) development of an AI/ML benchmark that will provide guidelines to be followed and exercises that span various computational domains.
February 2022 – December 2024	• Participation to the activities of the Organization for Economic Co-operation and Development (OECD)/ Nuclear Energy Agency (NEA)/ Committee on the Safety of Nuclear Installations (CSNI)/ Working Group on the Analysis and Management of Accidents (WGAMA) on the task "Application Tests for Realization of Inverse Uncertainty quantification and validation Methodologies in thermal-hydraulics (ATRIUM)". Some of the organization involved: Trectebel (Belgium), HUST and NPIC (China), CEA, IRSN, EDF (France), ENEA, Politecnico di Milano, Politecnico di Torino, NINE, Sapienza University of Rome, University of Palermo (Italy), GRS (Germany), NRA (Japan), NRG (The Netherlands), NCSU (USA). Main activities: 1) conducting exercises on Inverse Uncertainty Quantification (IUQ); 2) demonstrating the applicability of the previously developed SAPIUM guideline for the quantification and validation of uncertainties in nuclear thermal-hydraulics.
October 1, 2019 – September 30, 2023	• Co-proponent and 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, € 4535245.
January 1, 2020 – December 31, 2020	• Participation to the activities related to the deliverable "Functional safety analysis of a liquid metal divertor for the EU DEMO (2020 No. DTT1-

	LMD.S2-T003)", within the grant agreement n. 633053 - EUROfusion Consortium, funded by the European Atomic Energy Community (EURATOM) Research and Training Program 2014-2018 and 2019-2020, with the national coordination of ENEA. Main activities: supervision to the application of the methodology Functional Failure Mode and Effect Analysis (FFMEA) to the design by ENEA – completion of the analysis with the identification of the Postulated Initiating Events. NEMO group, Politecnico di Torino, 01/01/2020 - 31/12/2020.
June 2018 – May 2020	• Participation to the activities of the Organization for Economic Co-operation and Development (OECD)/ Nuclear Energy Agency (NEA)/ Committee on the Safety of Nuclear Installations (CSNI) Working Group on the Analysis and Management of Accidents (WGAMA) leading to the "Status report on thermal-hydraulic passive systems design and safety assessment", with the collaboration of: Università di Pisa, IRSN, Bel V, Politecnico di Milano, KAERI, FRAMATOME, KINS, CEA, NUBIKI, ENEA, Politecnico di Torino, GRS, OSU, USNRC, Universidad Politecnica de Valencia and others. Co-author of Chapter 3: "METHODS FOR SIMULATION AND RELIABILITY ASSESSMENT OF PASSIVE SYSTEMS".
January 1, 2018 – December 31, 2019	• Participation to the activities related to the deliverable "Functional safety analysis of a liquid metal divertor for the EU DEMO (2018-2019 No. DTT1-LMD.S2-T001 e T002)", within the grant agreement n. 633053 - EUROfusion Consortium, funded by the European Atomic Energy Community (EURATOM) Research and Training Program 2014-2018, with the national coordination of ENEA. Main activities: supervision to the application of the methodology Functional Failure Mode and Effect Analysis (FFMEA) to the design by ENEA – systematic analysis of the Plant Breakdown Structure and Functional Breakdown Structure. NEMO group, Politecnico di Torino, 01/01/2018 - 31/12/2019.
January 2015 – December 2015	• 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	• 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	• Researcher within the team of the Politecnico di Milano for the contract with the Fondation Pour Une Culture De Securitè 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).

INVITED WORKSHOPS & SEMINARS

2023	• 2023 7th International Conference on System Reliability and Safety (ICSRS 2023), November 22-24, 2023, Bologna, Italy. **Session Keynote lecture titled**: "Combination of Metamodeling and On-line Clustering for the Identification of Accident Precursors in an Innovative Nuclear System".
2022	• Seminar on "Uncertainty methodologies and applications in the nuclear field", "J. TALAIRACH" amphitheater, Neurospin, CEA-Saclay (France). **Invited presentation titled**: "Computational frameworks for the inverse uncertainty quantification of a thermal-hydraulic code for the analysis of a passive safety system".

2021	• 2021 5th International Conference on System Reliability and Safety (ICSRS 2021), November 24-26, 2021, Palermo, Italy. (Hybrid Conference). **Keynote lecture titled**: "Artificial Intelligence, Meta-Modeling and Adaptive Simulation for the Efficient Analysis of the Mathematical Models of Complex, Safety-Critical Engineering Systems, in the Presence of Uncertainties".
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	• 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".
2014	• Séminaire Francilien de Sûreté 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	• 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".
2012	• 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	• 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	• Seminar organized by the "Fondation pour une Culture de Securitè 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	• Seminar organized by the "Fondation pour une Culture de Securitè 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	• 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	• Seminar organized by the "Fondation pour une Culture de Securitè 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	• Seminar organized by the "Fondation pour une Culture de Securitè 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	• 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.

AWARDS AND SCHOLARSHIPS

March 2018	• Outstanding Reviewer 2018 for the ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering.
March 2015	• Outstanding Reviewer 2014 for the ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering.
December 11, 2011	• "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	• 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	• 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	• 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	• Gold Medal Award, Best Graduate Student of the Year in Nuclear Engineering – Politecnico di Milano (Milano, Italy).

LANGUAGES

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

COMPUTER SKILLS

	• Operating Systems: Ms-Dos; Windows 9X, NT, ME, 2000, XP, Vista, W7, W10, W11.
	• Programming languages: Fortran 77/90, Matlab®, C (notions).
	• Softwares: Office (Word, Excel, PowerPoint, Outlook); OpenOffice.org Suite; Acrobat, Winedt, Gsview; Matlab® (and Tools).

PUBLICATIONS SUMMARY

	Co-author of 58 papers on international journals, 1 editorial, 36 papers on proceedings of international conferences, 5 chapters in international books and 5 technical reports for international research institutes (full list available below).

PUBLICATIONS (106)
Synthetic numerical indicators

Papers submitted to international journals (1)

| 2023 | 1. | T. M. Coscia, F. Di Maio, N. Pedroni, A. Bersano, F. Mascari, E. Zio, "Global Sensitivity Analysis for Segmented Inverse Uncertainty Quantification in the Safety Analysis of Nuclear Power Plants", submitted to *Annals of Nuclear Energy*, ISSN: 0306-4549. |

Editorials (1)

| 2017 | 2. | 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) (58)

2023	3.	N. Abrate, A. Aimetta, S. Dulla, N. Pedroni, "Nuclear data uncertainty propagation for the Molten Salt Fast Reactor design", *Nuclear Science and Engineering,* May 2023, DOI: 10.1080/00295639.2023.2190861, ISSN: 00295639, 1943748X, published by Taylor and Francis.
2023	4.	N. Abrate, A. Moscatello, G. Ledda, N. Pedroni, F. Carbone, E. Maffia, A. Carpignano, "A novel approach combining bootstrapped non-intrusive reduced order models and unscented transform for the robust and efficient CFD analysis of accidental gas releases in congested plants", *Journal of Loss Prevention in the Process Industries*, Volume 83, July 2023, 105015, ISSN: 0950-4230, published by Elsevier Ltd.
2023	5.	N. Abrate, S. Dulla, N. Pedroni, "A non-intrusive reduced order model for the characterisation of the spatial power distribution in large thermal reactors", *Annals of Nuclear energy*, Volume 184, May 2023, 109674, ISSN: 0306-4549, https://doi.org/10.1016/j.anucene.2022.109674, published by Elsevier Ltd.
2022	6.	G. Roma, A. Antonello, F. Di Maio, N. Pedroni, E. Zio, A. Bersano, C. Bertani, F. Mascari, "Passive safety systems analysis: A novel approach for inverse uncertainty quantification based on Stacked Sparse Autoencoders and Kriging metamodeling", *Progress in Nuclear Energy*, Volume 148, June 2022, Article number 104209; ISSN: 0149-1970, doi: https://10.1016/j.pnucene.2022.104209 , published by Elsevier Ltd.
2022	7.	A. C. Uggenti, G. F. Nallo, A. Carpignano, N. Pedroni and R. Zanino, "Identification of the Postulated Initiating Events of Accidents of a CPS-Based Liquid Metal Divertor for the EU DEMO Fusion Reactor", *Fusion Science and Technology*, Volume 78, Issue 3, pp. 186-198, doi: 10.1080/15361055.2021.1984720, published by Taylor and Francis.
2022	8.	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* (Special Issue *NASA Langley Challenge on Optimization under Uncertainty*), Volume 164, 1 February 2022, paper 108206, ISSN 0888-3270, published by Elsevier Ltd, doi: 10.1016/j.ymssp.2021.108206.
2021	9.	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", *Energies,* Volume 14(17), 2021, paper 5552; ISSN: 1996-1073, doi: https://doi.org/10.3390/en14175552 , published by MDPI, Basel, Switzerland.

2021	10. 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", *Energies* (Special Issue *Advancements in Probabilistic Safety Assessment of Nuclear Energy for Sustainability*), Volume 14(15), 2021, paper 4688; ISSN: 1996-1073, doi: https://doi.org/10.3390/en14154688, published by MDPI, Basel, Switzerland.
2021	11. L. Puppo, N. Pedroni, A. Bersano, F. Di Maio, C. Bertani, E. Zio, "A Framework based on Finite Mixture Models and Adaptive Kriging for Characterizing Non-Smooth and Multimodal Failure Regions in a Nuclear Passive Safety System", *Reliability Engineering and System Safety*, Vol. 216, Dec. 2021, paper 107963, ISSN 0951-8320, published by Elsevier Ltd, doi: 10.1016/j.ress.2021.107963.
2021	12. 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	13. 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	14. 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	15. 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	16. 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	17. 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	18. 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	19. 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	20. 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	21. 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	22. 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	23. 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	24. 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	25. 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	26. 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	27. 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	28. 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.ress.2016.08.021.
2016	29. 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.ress.2016.06.007.
2016	30. 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.ress.2016.04.020.
2016	31. 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	32. 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.ress.2015.09.005.
2016	33. 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	34. 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	35. 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	36. N. Pedroni, E. Zio, "Hybrid Uncertainty and Sensitivity Analysis of the Model of an Twin-Jet Aircraft", *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	37. 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	38. 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	39. 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	40. 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	41. 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	42. 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	43. 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.ress.2011.08.006.
2012	44. 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.
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According to law 679/2016 of the Regulation of the European Parliament of 27th April 2016, I hereby express my consent to process and use my data provided in this CV

Date: 27 December 2023   Signature   _Nicola Pedroni_   (Nicola Pedroni)