

# Curriculum Vitae

## PROFESSIONAL EXPERIENCE

### “Sapienza” University of Rome, Department of Astronautical Electrical and Energy Engineering (DIAEE), Nuclear Engineering Group

12/2017 -> today

Position: Researcher (Ricercatore a tempo determinato di tipo A) SSD ING-IND/19

Research activities:

- Thermal hydraulic analysis with RELAP5, RELAP5-3D for LWR, GEN IV and fusion reactors.
- DEMO WCLL BoP development and simulation.
- RELAP5 mod3.3 version for FUSION development. Capability added:
  - Liquid metals as working fluids (LiPb, LBE, Pb, Na, ..) with 7 HTC correlations
  - Molten salts (HITEC) as working fluids with 3 additional HTC correlations (also for water)
  - Two phase flow maps for helicoidal HX and SG (both sides)
- Severe accident simulation with MELCOR computer programs and MELCOR-RAVEN interface development.
- MELCOR-FUSION coupling with RAVEN development.
- Sensitivity and uncertainty analysis with RAVEN.
- Deterministic Safety analysis (level 1 and 2) for LWR, GEN IV and fusion reactors.
- Simulation of ALFRED reactor considering the RCS and the associated safety systems directly interfacing with the reactor primary pool, for ENEA and Ansaldo Nucleare (FALCON consortium).
- Participation in the OECD/NEA/CSNI/WGAMA "Status report on thermal-hydraulic passive systems design and safety assessment", a benchmark exercise, based on the experimental data developed in the full scale PERSEO (in-Pool Energy Removal System for Emergency Operation), with RELAP5-3D.
- Participation in the IAEA CRP FFTF benchmark on TH-NK coupled simulations. Benchmark Analysis and Validation of PHISICS/RELAP5-3D® code against FFTF Loss of Flow Without Scram Test.
- Validation of RELAP5-3D MULTID component for large liquid metal pools. Sapienza is involved in many activities with experimental facilities (CIRCE ICE, CIRCE HERO, NACIE UP, PHENIX, FFTF, ..) with a focus on the nodalization techniques to obtain a right thermal stratification and convection in a large pool.

### “Sapienza” University of Rome

2/2014 -> 11/2017

Position: Research Fellow (Assegno di Ricerca)

Mission:

- Thermal hydraulic analysis with RELAP5, RELAP5-3D for LWR, GEN IV and fusion reactors
- RELAP5-3D validation for liquid metals
- Sensitivity and uncertainty analysis with RAVEN
- Severe accident simulation with MELCOR computer programs (PWR and BWR)
- Safety analysis for LWR, GEN IV and fusion reactors

- Innovative DHR design for liquid metal reactors

## S.R.S. Servizi di Ricerche e Sviluppo S.r.l.

7/2010 -> 11/2017

Position: Engineer, Consultant

Mission:

- Detailed design, procurement and construction of HELENA, THALLIUM, LIFUSS mod 3, CIRCE-SGTR facilities at ENEA Brasimone;
- Detailed design, procurement and construction of SIRIO and HERO-II facilities at SIET,
- Detailed design, procurement and construction of a large pool LBE facility in China,
- Detailed thermal-hydraulic analysis and mechanical design for LIFUS II facility components,
- Component and system design (HVAC, jet mixers, air lift, etc.) and TH analysis for a radioactive liquid waste cementation plant (Cemex),
- System design for a transportable radioactive liquid waste cementation plant (SICOMOR),
- Design and safety performance evaluation of a possible solution for the Decay Heat Removal System for a Lead cooled Fast Reactor (demonstrator),
- DEMO fusion plant BOP requirements and cycle analysis for WCLL concept,
- Preliminary design for the N-CEF Facility suitable for the DHR concept validation of the G4-M lead bismuth small modular reactor (in collaboration with University of South Carolina and AECOM),
- Tank design according with ASME sect. VIII,(DIV 1 and DIV 2).
- Piping stress analysis according with ASME B 31.1, B 31.3 and Sect. III (for Mochovce NPP),
- Radiation dose evaluation and minimization in nuclear plant decommissioning works,
- Design of BOP components and safety analysis for a pressurized small nuclear reactor,
- Fuel from plastic process development, component and system analysis, CFD analysis.

## Tutor for Università degli studi "Guglielmo Marconi"

Period: 6/2011 -> 11/2017

Position: Tutor

Mission: Tutor for the following exams:

- Nuclear Plant I;
- Nuclear Plant II;
- Thermal hydraulics;
- Reactor Thermal hydraulics;
- Reactor physics.

## Teaching experience

### Sapienza University of Rome

- Centrali Nucleari (Nuclear Power Plant) (from 2017-18)
- Fundamentals of Nuclear Engineering for Astronautics (from 2018-19)
- Simulazione Numerica dei Sistemi Nucleari (Numerical Simulation for nuclear systems) (from 2018-19)

## Society memberships, Awards and Honors

UIT member

### Other positions

- Member of the Teaching Committee of the Ph.D. in Energy and Environment (from AY 19/20)
- Member of the Academic Council of Energy Engineering and Chair of the IT services commission
- Member of the Faculty Committee
- Member of the Department Committee

## EDUCATION AND TRAINING

### PhD in Energy

November 2010 – February 2014

“Sapienza” University of Rome

Thesis: “Use of thermal-hydraulic analysis with system computer codes for safety analysis and design support”. Supervisor: Prof. Antonio Naviglio

Main activities: RELAP 5/mod3.3, RELAP5 – 3D and MELCOR simulation to enhance the safety performances of nuclear reactors (GEN III, GEN IV and fusion reactors).

### Master Degree in Energy and Nuclear Engineering

2008 – 2010

“Sapienza” University of Rome

“Design and safety assessment of safety related components of a small size advanced PWR”

Supervisor: Prof. Antonio Naviglio

110/110 cum laude

### Bachelor Degree in Energy Engineering

2003 – 2008

105/110

“Sapienza” Università di Roma

“Mechanical and fluid-dynamic design of an air-box for Formula SAE car”

Supervisor: Prof. Giovanni Broggio

## Funding Information [grants as PI-principal investigator or I-investigator]

### Sapienza University of Rome funds as PI

YEAR	TITLE	PROGRAM	GRANT VALUE [€]
2014	Development of a numeric model, through RELAP5-3D/PHISICS, for the Oskarshamn 2 NPP instability event occurred on 02/25/99	Sapienza Avvio alla Ricerca	2.000
2015	RELAP5-3D code validation in liquid metal natural circulation regime by using statistical methodology for the uncertainty evaluation vs experimental data	Sapienza Avvio alla Ricerca	2.000
2016	Statistical methodology application for the uncertainties evaluation	Sapienza Avvio alla Ricerca	2.000

	in the framework of thermal hydraulic code validation with a comparison versus CIRCE-HERO experimental data		
2017	RELAP5-3D© code validation for pool temperature stratification analysis in heavy liquid metal reactor by comparison with CIRCE-ICE experimental data	Sapienza Avvio alla Ricerca	2.000
2018	Development and validation of a thermal-hydraulic model of helical coil liquid metal steam generators for design and safety analyses of innovative fission and fusion nuclear plants	Sapienza Progetti di Ricerca	14.000
2018	Ottimizzazione di sistemi di asportazione del calore per reattori nucleari	Contratto di ricerca S.R.S. Servizi di Ricerche e Sviluppo Srl	15.000
2019	Sviluppo di mappe di flusso bifase per tubi elicoidali e implementazione nel codice RELAP05/MOD3.3 per la tecnologia del PbLi	Contratto di ricerca ENEA	32.000
	TOT		69.000

## Sapienza University of Rome funds as I

YEAR	TITLE	PROGRAM	GRANT VALUE [€]
2010-2012	Accordi di Programma Trienni 2007-2009 e 2010-2012 - Piani Annuali Realizzazione 2008/09, 2010, 2011 e 2012, attività Sapienza in LP1, LP2, LP3, LP5	ENEA - MSE	798.000
2012-2014	Accordi di Programma Triennio 2012-2014 - Piani Annuali Realizzazione 2012, 2013 e 2014	ENEA - MSE	350.000
2013	In-vessel dust mobilization analysis and explosion risk evaluation	Sapienza Progetti di Ricerca	8.600
2016	Improvements to PHISICS/RELAP5-3D capabilities for simulating HTGRs	Idaho National Laboratory Research contract	50.000
2015-2018	Accordi di Programma Triennio 2015-2017 - Piani Annuali Realizzazione 2015, 2016, 2017 e 2018, attività Sapienza in LP1 e LP2	ENEA - MSE	198.400
2015-2019	EUROFusion	EU H2020 EURATOM	400.000
2013-2017	Fp7 - ESNII PLUS. Preparing ESNII for HORIZON 2020 Grant agreement ID: 605172	Fp7 EURATOM	11.310
2015-2018	SESAME - Thermal-hydraulics Simulations and Experiments for the Safety Assessment of MEtal cooled reactors	EU H2020 EURATOM	10.000
2019-2022	MUSA - Management and Uncertainties of Severe Accident	EU H2020 EURATOM	92.000
	TOT		1.918.000

## Works in EU project as I:

1. FP-7 CP-ESFR Collaborative Project for European Sodium Fast Reactor -Seventh Framework Programme- EURATOM: Alternative DHR design.
2. FP-7 LEADER Lead-cooled European Advanced DEMonstration Reactor: Alternative radiation-based DHR design and ALFRED LOOP transient analysis with alternative DHR.
3. FP-7 GoFastR: Pre-stressed concrete pressure boundary cost evaluation.
4. FP-7 ESNII+: ALFRED Core mechanic design review.
5. H2020 SESAME: NACIE-UP and PHENIX dissymmetric transient benchmarks with R5-3D code; CIRCE-HERO test design and Benchmark with R5-3D code (WP4 and 5).
6. H2020 Eurofusion: WPs participation: BB, BoP, SAE and PMI. WCLL design team member.
7. H2020 MUSA: Severe accident analysis with MELCOR and sensitivity / uncertainty analysis with RAVEN for PHEBUS FPT1 experiment analysis, BWR-4 analysis and spent fuel pool.

## Summary of Scientific Achievements

PRODUCT TYPE	NUMBER	DATA BASE	START	END
PAPERS [INTERNATIONAL]	43	SCOPUS	2012	2019
PAPERS [NATIONAL]	5	SCOPUS	2012	2019
BOOKS [SCIENTIFIC]	0			
BOOKS [TEACHING]	0			

TOTAL IMPACT FACTOR	<b>47.45</b>
TOTAL CITATIONS	<b>264</b>
AVERAGE CITATIONS PER PRODUCT	<b>5.5</b>
HIRSCH (H) INDEX	<b>9</b>
NORMALIZED H INDEX*	<b>1.286</b>

\*H index divided by the academic seniority.

## Other activities

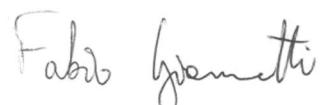
Organizing Committee for workshop in "Engineering aspects for SFRs"

Università degli Studi di Roma " La Sapienza" - Roma November 21-25, 2011

"Education and Training" in CP-ESFR (Collaborative Project for a European Sodium Fast Reactor –Seventh Framework Programme)

Rome, November 20, 2019

Signature



## ANNEX 1: LIST of PUBLICATIONS

### International Journals

1. Narcisi, V., Giannetti, F., Del Nevo, A., Tarantino, M., Caruso, G., Post-test simulation of a PLOFA transient test in the CIRCE-HERO facility (2019) Nuclear Engineering and Design, 355, art. no. 110321. DOI: 10.1016/j.nucengdes.2019.110321
2. Forgione, N., Martelli, D., Barone, G., Giannetti, F., Lorusso, P., Hollands, T., Papukchiev, A., Polidori, M., Cervone, A., Di Piazza, I., Post-test simulations for the NACIE-UP benchmark by STH codes (2019) Nuclear Engineering and Design, 353, art. no. 110279. DOI: 10.1016/j.nucengdes.2019.110279
3. Lorusso, P., Pesetti, A., Barone, G., Castelliti, D., Caruso, G., Forgione, N., Giannetti, F., Martelli, D., Rozzia, D., Van Tichelen, K., Tarantino, M., MYRRHA primary heat exchanger experimental simulations on CIRCE-HERO (2019) Nuclear Engineering and Design, 353, art. no. 110270. DOI: 10.1016/j.nucengdes.2019.110270
4. Narcisi, V., Giannetti, F., Del Nevo, A., Alcaro, F., Wang, X., Kraus, A., Brunett, A., Thomas, J., Girault, N., Grosjean, B., Caruso, G., Gerschenfeld, A., System thermal-hydraulic modelling of the Phénix dissymmetric test benchmark (2019) Nuclear Engineering and Design, 353, art. no. 110272, . DOI: 10.1016/j.nucengdes.2019.110272
5. Narcisi, V., Giannetti, F., Caruso, G., Investigation on RELAP5-3D© capability to predict thermal stratification in liquid metal pool-type system and comparison with experimental data (2019) Nuclear Engineering and Design, 352, art. no. 110152, . DOI: 10.1016/j.nucengdes.2019.110152
6. Lorusso, P., Pesetti, A., Tarantino, M., Narcisi, V., Giannetti, F., Forgione, N., Del Nevo, A., Experimental analysis of stationary and transient scenarios of ALFRED steam generator bayonet tube in CIRCE-HERO facility (2019) Nuclear Engineering and Design, 352, art. no. 110169, . DOI: 10.1016/j.nucengdes.2019.110169
7. Del Nevo, A., Arena, P., Caruso, G., Chiovaro, P., Di Maio, P.A., Eboli, M., Edemetti, F., Forgione, N., Forte, R., Froio, A., Giannetti, F., Di Gironimo, G., Jiang, K., Liu, S., Moro, F., Mozzillo, R., Savoldi, L., Tarallo, A., Tarantino, M., Tassone, A., Utili, M., Villari, R., Zanino, R., Martelli, E. Recent progress in developing a feasible and integrated conceptual design of the WCLL BB in EUROfusion project (2019) Fusion Engineering and Design, 146, pp. 1805-1809. DOI: 10.1016/j.fusengdes.2019.03.040
8. Narcisi, V., Lorusso, P., Giannetti, F., Alfonsi, A., Caruso, G., Uncertainty quantification method for RELAP5-3D© using RAVEN and application on NACIE experiments (2019) Annals of Nuclear Energy, 127, pp. 419-432. DOI: 10.1016/j.anucene.2018.12.034
9. Malinowski, L., Lewandowska, M., Giannetti, F., Design and analysis of the improved configuration of the secondary circuit for the EU-DEMO power plant (2019) Fusion Engineering and Design, 146, Part A, 1035-1038. DOI: 10.1016/j.fusengdes.2019.01.152
10. Tassone, A., Caruso, G., Giannetti, F., Del Nevo, A., MHD mixed convection flow in the WCLL: Heat transfer analysis and cooling system optimization (2019) Fusion Engineering and Design, 146, Part A, 809-813. DOI: 10.1016/j.fusengdes.2019.01.087
11. D'Onorio, M., Giannetti, F., Caruso, G., Porfiri, M.T., In-box LOCA accident analysis for the European DEMO water-cooled reactor (2019) Fusion Engineering and Design, 146, Part A, 732-735. Article in Press. DOI: 10.1016/j.fusengdes.2019.01.066
12. Martelli, E., Giannetti, F., Ciurluini, C., Caruso, G., Del Nevo, A., Thermal-hydraulic modeling and analyses of the water-cooled EU DEMO using RELAP5 system code (2019) Fusion Engineering and Design, 146, Part A, 1121-1125. DOI: 10.1016/j.fusengdes.2019.02.021
13. Narcisi, V., Giannetti, F., Martelli, E., Del Nevo, A., Tarantino, M., Caruso, G., Steam Generator mock-up preliminary design suitable for Pb-Li technology demonstration and code assessment (2019) Fusion Engineering and Design, 146 Part A, 1126-1130. DOI: 10.1016/j.fusengdes.2019.02.022
14. Martelli, E., Giannetti, F., Caruso, G., Tarallo, A., Polidori, M., Barucca, L., Del Nevo, A. Study of EU DEMO WCLL breeding blanket and primary heat transfer system integration (2018) Fusion Engineering and Design, 136, pp. 828-833.

15. Narcisi, V., Giannetti, F., Del Nevo, A., Tarantino, M., Caruso, G. Pre-test analysis of accidental transients for ALFRED SGBT mock-up characterization (2018) Nuclear Engineering and Design, 333, pp. 181-195.
16. Martelli, E., Caruso, G., Giannetti, F., Del Nevo, A. Thermo-hydraulic analysis of EU DEMO WCLL breeding blanket (2018) Fusion Engineering and Design, 130, pp. 48-55.
17. Lorusso, P., Bassini, S., Del Nevo, A., Di Piazza, I., Giannetti, F., Tarantino, M., Utili, M. GEN-IV LFR development: Status & perspectives (2018) Progress in Nuclear Energy, 105, pp. 318-331.
18. Martelli, E., Del Nevo, A., Arena, P., Bongiovì, G., Caruso, G., Di Maio, P.A., Eboli, M., Mariano, G., Marinari, R., Moro, F., Mozzillo, R., Giannetti, F., Di Gironimo, G., Tarallo, A., Tassone, A., Villari, R. Advancements in DEMO WCLL breeding blanket design and integration (2018) International Journal of Energy Research, 42 (1), pp. 27-52. DOI: 10.1002/er.3750
19. Malinowski, L., Lewandowska, M., Giannetti, F. Analysis of the secondary circuit of the DEMO fusion power plant using GateCycle (2017) Fusion Engineering and Design, 124, pp. 1237-1240. DOI: 10.1016/j.fusengdes.2017.03.026
20. Martelli, E., Caruso, G., Giannetti, F., Giovinazzi, A., Del Nevo, A. CFD analysis of WCLL BB PbLi manifold (2017) Fusion Engineering and Design, 124, pp. 1015-1018. DOI: 10.1016/j.fusengdes.2017.04.108
21. Del Nevo, A., Martelli, E., Agostini, P., Arena, P., Bongiovì, G., Caruso, G., Di Gironimo, G., Di Maio, P.A., Eboli, M., Giammusso, R., Giannetti, F., Giovinazzi, A., Mariano, G., Moro, F., Mozzillo, R., Tassone, A., Rozzia, D., Tarallo, A., Tarantino, M., Utili, M., Villari, R. WCLL breeding blanket design and integration for DEMO 2015: status and perspectives (2017) Fusion Engineering and Design, 124, pp. 682-686. DOI: 10.1016/j.fusengdes.2017.03.020
22. Zoino, A., Alfonsi, A., Rabiti, C., Szilard, R.H., Giannetti, F., Caruso, G. Performance-based ECCS cladding acceptance criteria: A new simulation approach (2017) Annals of Nuclear Energy, 100, pp. 204-216. DOI: 10.1016/j.anucene.2016.09.044
23. Caruso, G., Giannetti, F. Sizing of the Vacuum Vessel Pressure Suppression System of a Fusion Reactor Based on a Water-Cooled Blanket, for the Purpose of the Preconceptual Design (2016) Science and Technology of Nuclear Installations Volume 2016, Article ID 8719695
24. F. Giannetti, D. Vitale Di Maio, A. Naviglio, G. Caruso (2016) Thermal-hydraulic analysis of an innovative decay heat removal system for lead-cooled fast reactors. Nuclear Engineering and Design 305, 168–178 DOI: 10.1016/j.nucengdes.2016.05.005
25. P. Balestra, F. Giannetti, G. Caruso, A. Alfonsi (2016) New RELAP5-3D Lead and LBE Thermophysical Properties Implementation for Safety Analysis of Gen IV Reactors. Science and Technology of Nuclear Installations Volume 2016, Article ID 1687946, 15 pages
26. P. Balestra, C. Parisi, F. Giannetti, G. Caruso (2015) Effects of cross sections library parameters on the OECD/NEA Oskarshamn-2 benchmark solution, Annals of Nuclear Energy 85, 643-651
27. G. Caruso, F. Giannetti, A. Naviglio, (2015) An Experimental Study on the Air-Side Heat Transfer Coefficient and the Thermal Contact Conductance in Finned Tubes, Heat Transfer Engineering (ISSN: 0145-7632), 36:2, 212-221, DOI: 10.1080/01457632.2014.909224
28. D. Vitale Di Maio, L. Cretara, F. Giannetti, V. Peluso, A. Gandini, F. Manni, G. Caruso (2014) An alternative solution for heavy liquid metal cooled reactors fuel assemblies, Nuclear Engineering and Design, 278, pp. 503–514
29. G. Caruso, F. Giannetti, M. T. Porfiri, modeling of a confinement bypass accident with CONSEN, a fast-running code for safety analyses in fusion reactors (2013) Fusion Engineering and Design (ISSN: 0920-3796), 88 (12), pp. 3263–3271.
30. Caruso, G., Giannetti, F., Naviglio, A. Experimental investigation on pure steam and steam-air mixture condensation inside Tubes (2012) International Journal of Heat and Technology (ISSN: 03928764), 30 (2), pp. 77-84.
31. G. Caruso, L. Ferroni, F. Giannetti, A. Naviglio, D. Vitale Di Maio (2012) Proposal of high reliability DHR system for NPPs with never ending capacity, INTERNATIONAL JOURNAL OF RISK THEORY (ISSN:2248-1672), 11- 31, 2;

32. Damiano Vitale Di Maio, Antonio Naviglio, Fabio Giannetti, Fabio Manni (2012) An innovative pool with a passive heat removal system, Energy (ISSN:0360-5442) 45 (2012) 296-303,
33. A. Naviglio, D. Vitale Di Maio, F. Giannetti, G. Caruso, G. D'Amico (2011). A Proposal for Simplification and Cost Reduction of SFRs, INTERNATIONAL JOURNAL OF RISK THEORY (ISSN:2248-1672), 23- 44, 1;

## International Congresses

1. Eboli, M., Del Nevo, A., Forgione, N., Giannetti, F., Mazzi, D., Ramacciotti, M., Characterization of leak detection in HLM system using LIFUS5/MOD3 facility (2019) 18th International Topical Meeting on Nuclear Reactor Thermal Hydraulics, NURETH 2019, pp. 2411-2424.
2. Fabio Giannetti, Pierdomenico Lorusso, Vincenzo Narcisi, Gianfranco Caruso, Antonio Naviglio, Ulisse Pasquali, Michele Frignani, Alessandro Alemberti, Mariano Tarantino, Daniele Martelli, ALFRED PROTECTED LOSS OF FLOW ACCIDENT EXPERIMENT IN CIRCE FACILITY, IAEA Technical Meeting on the Benefits and Challenges of Fast Reactors of the SMR Type, Session V: Safety Aspects of Fast SMRs, Milano Sep 24-27, 2019
3. 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) Real Collegio, Lucca, Italy, May 13-19, 2018 Paper n° BEPU2018-282
4. Giannetti F., Narcisi V., Subioli A., Del Nevo A., Phénix transient analysis for the assessment of RELAP5-3D based on dissymmetric test benchmark (2018) International Conference on Nuclear Engineering, Proceedings of ICONE 26, Volume 6B, Paper No. ICONE26-82419
5. Forgione, N., Polidori, M., Angelucci, M., Cervone, A., Barone, G., Di Piazza, I., Giannetti, F., Hollands, T., Lorusso, P., Papukchiev, A. Blind simulations of NACIE-UP experimental tests by STH codes (2018) International Conference on Nuclear Engineering, Proceedings, ICONE, Volume 4, Paper No. ICONE26-81434.
6. Marinari, R., Alemberti, A., Caramello, M., Rizzo, E., Giannetti, F., Tarantino, M., Nitti, F.S., Achilli, A., Ferri, R. SIRIO: An experimental facility for a new heat removal system passively controlled by non-condensable gases (2018) International Conference on Nuclear Engineering, Proceedings, ICONE, Volume 6B, Paper No. ICONE26-82379.
7. Alessandro Tassone, Alessandro Del Nevo, Pietro Arena, Gaetano Bongiovì, Gianfranco Caruso, Pietro Alessandro di Maio, Giuseppe di Gironimo, Marica Eboli, Nicola Forgione, Ruggero Forte, Fabio Giannetti, Giovanni Mariano, Emanuela Martelli, Fabio Moro, Rocco Mozzillo, Andrea Tarallo, and Rosaria Villari, Recent Progress in the WCLL Breeding Blanket Design for the DEMO Fusion Reactor (2018) IEEE TRANSACTIONS ON PLASMA SCIENCE DOI: 10.1109/TPS.2017.2786046
8. Narcisi V.; Giannetti F.; Lorusso P.; Caruso G.; Tarantino M.; Del Nevo A. Thermal Stratification analysis in CIRCE-ICE pool facility with RELAP5-3D© model; (2017), In: Proceedings of Global Symposium on Lead and Lead Alloy based Nuclear Energy Science and Technology (GLANST 2017)
9. A. Del Nevo, P. Agostini, P. Arena, G. Bongiovì, G. Caruso, G. Di Gironimo, P. A. Di Maio, M. Eboli, R. Giammusso, F. Giannetti, A. Giovinazzi, E. Martelli, G. Mariano, F. Moro, R. Mozzillo, A. Tassone, D. Rozzia, A. Tarallo, M. Tarantino, M. Utili, R. Villari (2016) WCLL breeding blanket design and integration for DEMO 2015: status and perspectives, SOFT2016, Prague, Czech Republic, 5-9 Sept. 2016
10. Leszek Malinowski, Monika Lewandowska, Fabio Giannetti (2016) Analysis of the secondary circuit of the DEMO fusion power plant using GateCycle, SOFT2016, Prague, Czech Republic, 5-9 Sept. 2016
11. Emanuela Martelli, Gianfranco Caruso, Fabio Giannetti, Andrea Giovinazzi, Alessandro Del Nevo (2016) Thermal-Hydraulic CFD analysis of WCLL BB PbLi manifold, SOFT2016, Prague, Czech Republic, 5-9 Sept. 2016

12. Alfonsi A., Zoino A., Rabiti C., Giannetti F., Caruso G. (2016) Enhanced Shuffling and Fuel Management Capability in PHISICS code. *Transactions of the American Nuclear Society*, Vol. 114, New Orleans, Louisiana, June 12–16, 2016
13. A. Zoino, A. Alfonsi, C. Rabiti, F. Giannetti, G. Caruso (2015) Simulation Tools and Approaches for the Compliance with Performance-Based ECCS Cladding Acceptance Criteria (10 CFR 50.46C), *Proceedings American Nuclear Society 2015 Winter Meeting*, November 8-12, 2015, Washington, DC, US
14. I. Rinaldi, A. Alfonsi, C. Rabiti, J. Cogliati, F. Giannetti, G. Caruso (2015) A Comprehensive Validation Approach Using the RAVEN Code, *Proceedings American Nuclear Society 2015 Annual Meeting*, June 7-11, 2015, San Antonio, TX, US
15. P. Balestra, C. Parisi, E. Negrenti, F. Giannetti, G. Caruso (2014) Effects of cross sections libraries parameters on the OECD/NEA OSKARSHAMN-2 benchmark solution, *PHYSOR 2014*, Kyoto, Japan, September 28 – October 3, 2014
16. M. Ciotti, L. Ferroni, F. Giannetti, L. Manzano, V Kuznetsov, G. Fesenko, Scenario Analysis on the Benefits of Multi-national Cooperation for the Development of a Common Nuclear Energy System Based on PWR and LFR Fleets, *Proceedings of the 22nd International Conference on Nuclear Engineering ICONE22*, July 7-11, 2014, Prague, Czech Republic
17. P. Balestra, C. Parisi, F. Giannetti, E. Negrenti and A. Naviglio, OSKARSHAMN-2 BWR INSTABILITY EVENT MODELLING BY RELAP5-3D CODE, *The 15th International Topical Meeting on Nuclear Reactor Thermal - Hydraulics, NURETH-15*, Pisa, Italy, May 12-17, 2013

## National Congresses

18. Edemetti F.; Tassone A.; Narcisi V.; Giannetti F.; Ferroni L.; Tarantino M. Numerical analysis of temperature stratification in the CIRCE pool facility; presented at 37th UIT Heat Transfer Conference (2018) and submitted to *Journal of Physics: Conference Series*, 1224 (1), art. no. 012007
19. Narcisi, V., Giannetti, F., Del Nevo, A., Tarantino, M., Caruso, G. Pre-test analysis of protected loss of primary pump transients in CIRCE-HERO facility (2017) *Journal of Physics: Conference Series*, 923 (1), art. no. 012005 DOI: 10.1088/1742-6596/923/1/012005
20. Narcisi, V., Giannetti, F., Tarantino, M., Martelli, D., Caruso, G. Pool temperature stratification analysis in CIRCE-ICE facility with RELAP5-3D© model and comparison with experimental tests (2017) *Journal of Physics: Conference Series*, 923 (1), art. no. 012006 DOI: 10.1088/1742-6596/923/1/012006
21. Pescarini, M., Mascari, F., Mostacci, D., De Rosa, F., Lombardo, C., Giannetti, F. Analysis of unmitigated large break loss of coolant accidents using MELCOR code (2017) *Journal of Physics: Conference Series*, 923 (1), art. no. 012009, DOI: 10.1088/1742-6596/923/1/012009
22. Tassone, A., Giannetti, F., Caruso, G. Numerical study of laminar magneto-convection in a differentially heated square duct (2017) *Journal of Physics: Conference Series*, 796 (1), art. no. 012004, DOI: 10.1088/1742-6596/796/1/012004
23. F. Giannetti, F. Mascari, L. Gramiccia, A. Naviglio, F. De Rosa. Station Blackout transient analysis for a PWR like design by using the MELCOR code. 32nd UIT Heat Transfer Conference, Pisa, 23-25 June 2014
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3. A. Tincani, A. Aiello, A. Tarallo, F. Giannetti, C. Ciurluini, E. Garrone, M. Bruzzone, M. Utili, V. Pierantoni, R. Forte, P. A. Di Maio, Technical note accompanying the Process Flow Diagrams of the four main WCLL TBS ancillary systems, H2020 EUROFUSION PMI-7-2-T002-D2.1 EFDA\_D\_2NJ3WE
4. A. Tincani, R. Forte, C. Ciurluini, F. Giannetti, E. Garrone, M. Bruzzone, K. Abraham, V. Pierantoni, P. Arena, A. Tarallo, Deliverable B2.2 : WCLL-TBS System Description Document, part on the Ancillary System. H2020 EUROFUSION PMI-7.1.2.Task 2-T002-D001
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9. M. Eboli (Università di Pisa), D. Mazzi (SRS), F. Giannetti (Sapienza Università di Roma), T. Stella (ISE), A. Del Nevo, A. Neri, S. Cati, D. Gianotti, M. Valdiserri, D. Santoli (ENEA) Test di caratterizzazione sperimentale del sistema per la rilevazione di piccole perdite nel Generatore di Vapore LFR. ENEA ADPFISS-LP2-165
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23. M. Nobili, G. Caruso, F. Giannetti Interim report on parametric accident analyses: LOFA in WCLL blanket, H2020 EUROfusion SAE-2.23.1-T01-D01
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## **ANNEX II: LIST of supervisions**

### **Supervisor for the following PhD students:**

1. Cristiano Ciurluini, XXXIV ciclo, FFTF PHISICS-RELAP5-3D coupled analysis for an ULOF transient
2. Francesco Massaro, XXXV ciclo, Radioactive cask design and verification

### **Co-supervisor in the follow PhD thesis:**

1. Vincenzo Narcisi, Validation of RELAP5-3D© for liquid metal reactor technologies (planned February 2020)
2. Pierdomenico Lorusso, Experimental and numerical analysis of heavy liquid metal systems for Generation IV fast reactors (planned February 2020)
3. E. Martelli "Thermal hydraulic design of DEMO Water Cooled Lithium Lead Breeding Blanket and integration with primary system and balance of plant" (Supervisor Prof. G. Caruso, in collaboration with ENEA) a.y. 2016-2017 (defended February 2018)
4. Paolo Balestra "STUDY OF THE 25/02/1999 OSKARSHAMN-2 BWR INSTABILITY EVENT USING RELAP5-3D/PHISICS NEUTRONIC 3D AND THERMAL HYDRAULIC COUPLED CODES" (Supervisor Prof. G. Caruso, in collaboration with ENEA and INL) a.y. 2015-2016 (defended February 22, 2017)

### **Supervisor in the follow master thesis:**

1. F. Peruzzini "ITER Water Cooling System transient analysis using RELAP5mod3.3" planned January 2020
2. F. Retrosi "Alternative pre-conceptual design and transient analysis for the ITER Water Cooling System with an additional loop" planned January 2020
3. V. Botteghelli "Coupled Neutronic/Thermal-Hydraulic Analysis of Fast Flux Test Facility Loss Of Flow Without Scram Transient using ERANOS/PHISICS/RELAP5-3D codes" planned January 2020
4. S. Salcini "Piping Stress Analysis: nuclear firefighting system for a WWER" planned January 2020
5. G. Padula "EU-DEMO WCLL Balance of Plant: Power Conversion System analysis and preliminary design" a.y. 2017/2018 (defended July 27, 2018)
6. Giampaolo Alessio, Unmitigated Loss of Feed Water transient analysis in PWR 3 loop using severe accident code MELCOR, (defended January 14, 2019)
7. Valabrega Nathan, Thermal-Hydraulic tridimensional transient analysis of a new ALFRED Primary System Configuration with Helical Coil steam generators (defended January 2019)
8. Costantini Pierpaolo, Multi-dimensional transient analysis of a Protected Loss of Flow Accident in ALFRED reactor with Isolation Condenser as DHR (defended January 2019)
9. Riccardo Cocci, Loss Of Coolant Accidents simulations on the European Pressurized Reactor with thermal-hydraulic system code CATHARE (defended October 2019)
10. Tommaso D'Alessandro, Development of a RELAP5 mod3.3 version for fusion applications (defended October 2019)

### **Co-supervisor in the follow master thesis:**

1. Alessandro Del Ferraro, "ALFRED Neutronic/Thermal-Hydraulic Coupled Analysis for Unprotected Transients using PHISICS/RELAP5-3D codes" (defended March 20, 2018)
2. Andrea Subioli, "Thermal-hydraulic analysis of PHENIX NPP dissymmetric transient, using RELAP5-3D computer program" (defended March 20, 2018)

3. Cristiano Ciurluini "DEMO Primary Heat Transfer System and Balance of Plant: thermal hydraulic design and simulations using Relap-5 code", (defended January 26, 2018)
4. Giordano Genovese "", (defended January 26, 2018)
5. Lorenzo Spera "Uncertainty Quantification e Validazione del codice RELAP5-3D© tramite l'utilizzo del codice RAVEN applicato alla facility sperimentale NACIE", (defended January 26, 2018)
6. Silvia Daniele "Neutronic/Thermal-Hydraulic Coupling Validation for PHISICS/RELAP5-3D Codes Based on PHÉNIX End-of-Life-Experimental Data" A/A 2016/2017, (defended January 26, 2018)
7. Pierdomenico Lorusso "Validation of RELAP5-3D code by natural and gas enhanced circulation of heavy liquid metal tests in NACIE-UP facility" (Supervisor Prof. G. Caruso) a.a. 2015-2016
8. Italo Luciani "Analysis of Fukushima Daiichi Unit-3 accident, using severe accident code MELCOR" (Supervisor Prof. G. Caruso, in collaboration with Kyoto University) a.a. 2015-2016
9. Gianluca Angelucci "Study on the development of a Physics-of-Failure reliability model for the solid insulator of generator step-up transformers" (Supervisor Prof. A. Naviglio, in collaboration with MIT) a.a. 2015-2016
10. Francesco Edemetti "Preliminary design and numerical simulation of a new heat removal system for the ALFRED reactor" (Supervisor Prof. G. Caruso) a.a. 2014-2015
11. Vincenzo Narcisi "Pre-test simulations of the experimental campaign in the CIRCE-HERO facility" (Supervisor Prof. G. Caruso) a.a. 2014-2015
12. Angelo Zoino "Simulation tools and approaches for the compliance with performance-based ECCS cladding acceptance criteria (10 CFR 50.46C)" (Supervisor Prof. G. Caruso, in collaboration with INL) a.a. 2014-2015
13. Alessandro Tassone "Computational fluid-dynamics simulation of the MHD flow in the Water-Cooled Lithium Lead breeding blanket module" (Supervisor Prof. G. Caruso, in collaboration with ENEA) a.a. 2014-2015
14. Ivan Rinaldi "A comprehensive approach to code validation with RAVEN" (Supervisor Prof. G. Caruso, in collaboration with INL) a.a. 2013-2014
15. Edoardo Cascioli "Reactivity transient behavior of a LBEFR core with MOX fuel" (Supervisor Prof. A. Naviglio, in collaboration with SCK-CEN) a.a. 2013-2014
16. Tiziano Vignaroli "Single and two-phase lumped parameters flow modelling for dynamic simulation of sodium cooled Gen IV nuclear plants" -In collaboration with RSE- Milano (Supervisor Prof. A. Naviglio) a.a. 2011-2012
17. Leonardo Scotto "Progettazione di sistemi e componenti per la condensazione frazionata di gas di sintesi" (Supervisor Prof. A. Naviglio) a.a. 2011-2012
18. Paolo Balestra "BWR instability event modelling by RELAP5-3D© code" (Supervisor Prof. A. Naviglio) a.a. 2011-2012
19. Lorenzo Barboni "Simulazione del transitorio incidentale SGTR nel reattore nucleare MARS con il codice di calcolo termoidraulico RELAP5/MOD 3.3" (Supervisor Prof. M. Frullini) a.a. 2010-2011

### **Co-supervisor in the follow bachelor thesis:**

1. Emanuele Silvestri "MASSIMIZZAZIONE DEL RENDIMENTO DEL CICLO VAPORE SECONDARIO DI UN IMPIANTO TERMICO A FUSIONE" (Supervisor Prof. A. Naviglio) a.a. 2014-2015
2. Laura Luzzi "ANALYSIS OF A POSSIBLE THERMAL CYCLE FOR A FUSION REACTOR SIMULATED WITH GATECYCLE SOFTWARE" (Supervisor Prof. A. Naviglio) a.a. 2014-2015

3. Giorgio Baiocco "Study of thermal stress in the core of a LWR, by using MELCOR code, with particular attention to the COR package" (Supervisor Prof. A. Naviglio) a.a. 2011-2012
4. Fabio De Bernardinis "Core concrete attack MELCOR analisys in LWR reactors" (Supervisor Prof. L. Gramiccia) a.a. 2011-2012
5. Luca Prestigiacomo "Modellazione con il codice Melcor del comportamento di un ECCS in circolazione naturale basato sulla condensazione del vapore prodotto nel nocciolo di un BWR" (Supervisor Prof. L. Gramiccia) a.a. 2011-2012
6. Angelo Zoino "Analisi della esplosione di idrogeno all'interno dell'edificio di un reattore BWR in seguito alla reazione Zircaloy vapore tramite il codice MELCOR" (Supervisor Prof. A. Naviglio) a.a. 2011-2012
7. Gianluca Angelucci "Progettazione preliminare e valutazione dei costi del contenimento secondario in calcestruzzo armato precompresso per un reattore di IV generazione di tipo GFR" (Supervisor Prof. A. Naviglio) a.a. 2011-2012
8. Rocco Marotta "Impianti di condizionamento geotermico di profondità" (Supervisor Prof. L. Gramiccia) A/A 2011/2012
9. Pirlea Elvis Cristinel "Criterio di dimensionamento di pompe di calore con sonde geotermiche" (Supervisor Prof. L. Gramiccia) a.a. 2011-2012
10. Enea De Meo "DESCRIPTION OF AVAILABLE SAFETY CODES AND RELATIVE MODELS FOR DEMO FUSION REACTOR" (Supervisor Prof. A. Naviglio) a.a. 2012-2013
11. Jacopo Castellani "Bubble free rise velocity and equilibrium diameter evaluation in sodium-argon and lead-argon two-phase flow" (Supervisor Prof. A. Naviglio) a.a. 2012-2013
12. Marco Biagioperla Barone "Analisi termofluidodinamica e modellizzazione del preriscaldatore d'aria per il sistema microCHP a SOFC" (Supervisor Prof. A. Naviglio) a.a. 2012-2013
13. Daniele Ragni "Studio delle proprietà termofisiche di Litio e Litio—Piombo per applicazione in reattori a fusione" (Supervisor Prof. A. Naviglio) a.a. 2012-2013
14. Dalia Fadlun "Studio della esplosione di idrogeno all'interno dell'edificio di un reattore BWR tramite il codice MELCOR" (Supervisor Prof. A. Naviglio) a.a. 2012-2013
15. Mirko Busini "Reattori nucleari per uso spaziale" (Supervisor Prof. A. Naviglio) a.a. 2013-2014