

International collaboration

HORIZON 2020

- **EUROfusion.** Implementation of activities described in the Roadmap to Fusion during Horizon 2020 through a joint programme of the member of the EUROfusion consortium (2014-2018)
- **IVMR.** In Vessel Melt Retention Severe Accident Strategy for existing and future NPPs (2015-2019)
- **BRILLIANT.** Baltic Region Initiative for Long Lasting InnovAtive Nuclear Technologies (2015-2018)
- **FASTNET.** FAST Nuclear Emergency Tools (2015-2019)
- **INCEFA PLUS.** INcreasing Safety in NPPs by Covering gaps in Environmental Fatigue Assessment (2015-2020)
- **GEMINI PLUS.** Transatlantic Working Partnership for Intrinsic Nuclear Safety (2017-2020)



7-TH FRAMEWORK PROGRAMME

- **CESAM.** Code for European Severe Accident Management (2013-2017)
- **ASAMPESA_E.** Advanced Safety Assessment: Extended PAS (2013-2016)
- **NC2I-R.** Nuclear Cogeneration Industrial Initiative – Research and Development Coordination (2013-2015)
- **ARCADIA.** Assessment of Regional Capabilities for new reactors Development through an Integrated Approach (2013-2016)
- **SARGEN_IV.** Proposal for a harmonized European methodology for the safety assessment of innovative reactors with fast neutron spectrum planned to be built in Europe (2012-2013)
- **MATTER.** MATerials TEsting and Rules (2011-2014)
- **SARNET2.** Network of Excellence for a Sustainable Integration of European Research on Severe Accident Phenomenology (2009-2013)



Main areas of research



SAFETY ASSESSMENT OF NPPS AND OTHER NUCLEAR FISSION FACILITIES



SAFETY ANALYSIS OF FUSION REACTORS



STRUCTURAL INTEGRITY ASSESSMENT OF INDUSTRIAL AND COMPLEX TECHNICAL SYSTEMS



RISK, HAZARD AND RELIABILITY ANALYSIS OF INDUSTRIAL FACILITIES



ENERGY SECURITY



FUNDAMENTAL RESEARCH IN THERMAL PHYSICS



DEVELOPMENT OF NUCLEAR COMPETENCES AT EU LEVEL



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Researchers of the Laboratory are implementing different projects: state subsidy funded scientific research projects; permanent institutional scientific research and experimental development program; international projects under H2020 and FP7 Programs, and other projects with national and foreign enterprises.

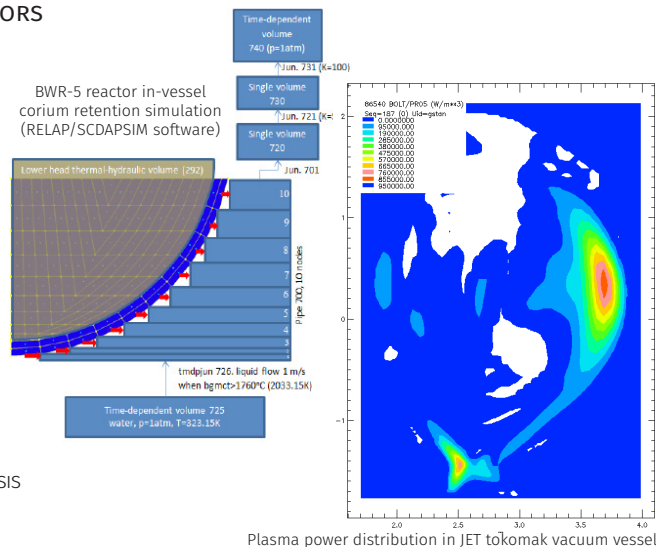
Under activities of European Nuclear Safety Training and Tutoring Institute (ENSTTI) researchers participated in projects on transfer of nuclear safety knowledge to experts of the NRAs and their TSOs.

SAFETY OF NPPS AND OTHER NUCLEAR FACILITIES

- SAFETY ASSESSMENT AND PREPARATION OF SAFETY RELATED DOCUMENTS
- THERMAL-HYDRAULIC ANALYSIS OF ACCIDENTS AND TRANSIENT PROCESSES
- ASSESSMENT OF THERMAL-HYDRAULIC PARAMETERS IN NPP CONTAINMENTS AND OTHER PREMISES
- SIMULATION OF NEUTRON DYNAMICS IN REACTOR CORE
- SIMULATION OF RADIONUCLIDES AND AEROSOLS TRANSPORT
- MODELLING OF PROCESSES IN NUCLEAR FUEL AND CLADDING (PELLET CRACKING, PELLET CLADDING INTERACTION, ETC.)
- LEVEL-1 AND LEVEL-2 PROBABILISTIC SAFETY ASSESSMENT
- SAFETY ASSESSMENT OF DECOMMISSIONING AND DISMANTLING OF NUCLEAR INSTALLATIONS
- CRITICALITY AND SHIELDING ANALYSIS
- RADIATION DOSES ASSESSMENT
- UNCERTAINTY AND SENSITIVITY ANALYSIS

SAFETY OF FUSION REACTORS

- SAFETY ASSESSMENT,
- ACCIDENT ANALYSIS,
- THERMAL-HYDRAULIC ANALYSIS,
- NEUTRON TRANSPORT SIMULATION,
- ACTIVATION ANALYSIS,
- RADIATION DOSES ESTIMATION,
- STRENGTH ANALYSIS,
- UNCERTAINTY AND SENSITIVITY ANALYSIS

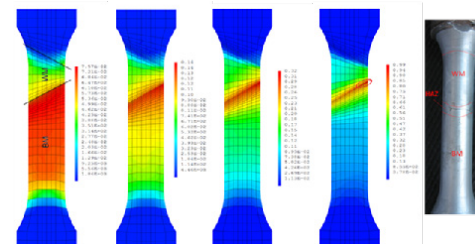


RISK OF TECHNOLOGIES AND ENERGY SECURITY

- RISK, HAZARD AND RELIABILITY ANALYSIS OF INDUSTRIAL SITES
- ASSESSMENT OF ENERGY SECURITY OF SUPPLY AND CRITICAL INFRASTRUCTURES PROTECTION
- EXTERNALS EVENTS ANALYSIS,
- FAILURE ANALYSIS AND ENGINEERING ASSESSMENT FOR COMPLEX TECHNICAL SYSTEMS
- RELIABILITY ASSESSMENT OF PROCESSES IN NET SYSTEMS

STRUCTURAL INTEGRITY ASSESSMENT

- STRENGTH ANALYSIS OF STRUCTURES, PIPING AND COMPONENTS IN COMPLEX TECHNICAL SYSTEMS,
- STATIC AND DYNAMIC ANALYSIS,
- FINITE ELEMENT ANALYSIS,
- LINEAR AND NON-LINEAR ANALYSIS,
- ANALYSIS OF COMPONENTS CONTAINING DEFECTS.



FUNDAMENTAL RESEARCH IN THERMAL PHYSICS

- ONE-PHASE AND TWO-PHASE FLOW EXPERIMENTAL AND NUMERICAL INVESTIGATIONS,
- CFD SIMULATIONS,
- CONDENSATION IMPLOSION PHENOMENA,
- FRICTION AND SHEAR STRESSES IN CONDENSING FLOW.



MEMBERSHIP IN INTERNATIONAL ORGANIZATIONS

