

Technical Meeting on the Safety Approach for Liquid Metal Cooled Fast Reactors and the Analysis and Modelling of Severe Accidents

Monday, 13 March 2023 - Friday, 17 March 2023

IAEA

Book of Abstracts

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Fast Reactor within the Generation IV International Forum 20

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Technical Session 2.4: Accident Expansion Phase and Long Term Behavior in SFR / 4

Analysis of the remaining core material coolability in a SFR core

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Confirmation that the work is original and has not been published anywhere else.:

Yes

Topic of the Abstract:

Subtrack 2 Analysis and Modelling of Severe Accidents for LMFR

Technical Session 2.4: Accident Expansion Phase and Long Term Behavior in SFR / 6

Development of an evaluation method for in-place cooling of a degraded core in severe accidents of sodium-cooled fast reactors

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Yes

Topic of the Abstract:

Subtrack 2 Analysis and Modelling of Severe Accidents for LMFR

Technical Session 2.2: Initiation and Transition Phases of Severe Accidents of SFR / 7

Status of numerical tool development for initiating phase in severe accidents of SFRs in Japan

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Confirmation that the work is original and has not been published anywhere else.:

Yes

Topic of the Abstract:

Subtrack 2 Analysis and Modelling of Severe Accidents for LMFR

Technical Session 1.2: Safety Approach for SFR / 8

Consideration on safety design approach for future SFRs in Japan, featuring prevention and mitigation of a severe accident

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Yes

Topic of the Abstract:

Subtrack 1 Safety approach for LMFR

Technical Session 2.1: Severe Accident Analysis and Experimental Validation of SFR - Part I / 10

Development of analysis methods for SFR severe accidents in JAEA and assessment of applicability to safety analysis

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No

Topic of the Abstract:

Subtrack 2 Analysis and Modelling of Severe Accidents for LMFR

Technical Session 2.2: Initiation and Transition Phases of Severe Accidents of SFR / 11

Design features and safety assessment of a sodium-cooled fast reactor in Japan for mitigation of severe accidents

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Confirmation that the work is original and has not been published anywhere else.:

No

Topic of the Abstract:

Subtrack 1 Safety approach for LMFR

Technical Session 2.3: Accident Analysis and Experimental Programs for LFR / 12

Heat Transfer Characteristics of liquid metal Fast reactors

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Confirmation that the work is original and has not been published anywhere else.:

Topic of the Abstract:

Subtrack 2 Analysis and Modelling of Severe Accidents for LMFR

Technical Session 2.1: Severe Accident Analysis and Experimental Validation of SFR - Part II
/ 22

Modern approaches to deterministic safety analysis for sodium fast reactors

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Yes

Topic of the Abstract:

Subtrack 2 Analysis and Modelling of Severe Accidents for LMFR

Technical Session 1.2: Safety Approach for SFR / 23

Sodium Fast Reactor Severe Accident Prevention and Mitigation Strategy: U.S. Perspective

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Yes

Topic of the Abstract:

Subtrack 1 Safety approach for LMFR

Technical Session 2.1: Severe Accident Analysis and Experimental Validation of SFR - Part I / 24

The Simplified Radionuclide Transport (SRT) Code for the Source Term Assessment of Pool-Type Metal Fuel Sodium Fast Reactor Severe Accidents

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Yes

Topic of the Abstract:

Subtrack 2 Analysis and Modelling of Severe Accidents for LMFR

Technical Session 2.2: Initiation and Transition Phases of Severe Accidents of SFR / 25

Recent developments in modeling of severe accident analysis code PREDIS

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Yes

Topic of the Abstract:

Subtrack 2 Analysis and Modelling of Severe Accidents for LMFR

Technical Session 2.1: Severe Accident Analysis and Experimental Validation of SFR - Part I / 26

SFRs severe accident transient study with new particle flow model in SIMMER-V

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Confirmation that the work is original and has not been published anywhere else.:

Yes

Topic of the Abstract:

Subtrack 2 Analysis and Modelling of Severe Accidents for LMFR

Technical Session 1.3: Safety Approach for LFR / 27

MYRRHA Pre-licensing Nuclear Safety Approach

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Yes

Topic of the Abstract:

Subtrack 1 Safety approach for LMFR

Technical Session 1.2: Safety Approach for SFR / 28

Mitigation of severe accident by design: strategy and study approach

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Confirmation that the work is original and has not been published anywhere else.:

Yes

Topic of the Abstract:

Subtrack 1 Safety approach for LMFR

Technical Session 2.1: Severe Accident Analysis and Experimental Validation of SFR - Part I / 29

3D Thermalhydraulics-neutronics simulation of SFR core degradation with the SEASON French Platform

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Confirmation that the work is original and has not been published anywhere else.:

Yes

Topic of the Abstract:

Subtrack 2 Analysis and Modelling of Severe Accidents for LMFR

Technical Session 2.1: Severe Accident Analysis and Experimental Validation of SFR - Part II / 30

Design-oriented simulation tools in French SFR projects

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Confirmation that the work is original and has not been published anywhere else.:

Yes

Topic of the Abstract:

Subtrack 2 Analysis and Modelling of Severe Accidents for LMFR

Technical Session 2.1: Severe Accident Analysis and Experimental Validation of SFR - Part I / 31

CEA Experimental Roadmap for Sodium Fast Reactor Severe Accident R&D

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Yes

Topic of the Abstract:

Subtrack 2 Analysis and Modelling of Severe Accidents for LMFR

Technical Session 2.4: Accident Expansion Phase and Long Term Behavior in SFR / 32

French research programs related to the severe accident phenomenology in the lower plenum of a SFR

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Topic of the Abstract:

Subtrack 2 Analysis and Modelling of Severe Accidents for LMFR

Technical Session 2.1: Severe Accident Analysis and Experimental Validation of SFR - Part I / 33

Towards an integrated French software platform for severe accident simulation in SFR

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Confirmation that the work is original and has not been published anywhere else.:

Yes

Topic of the Abstract:

Subtrack 2 Analysis and Modelling of Severe Accidents for LMFR

Technical Session 2.1: Severe Accident Analysis and Experimental Validation of SFR - Part II / 34

ARDECO CEA-KIT cooperation on ASTRID safety studies and related code developments

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Topic of the Abstract:

Subtrack 2 Analysis and Modelling of Severe Accidents for LMFR

Technical Session 2.2: Initiation and Transition Phases of Severe Accidents of SFR / 35

Development of fuel deformation module during Power and Flow Transient in Sodium Cooled Fast Reactor Core

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Confirmation that the work is original and has not been published anywhere else.:

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Topic of the Abstract:

Subtrack 2 Analysis and Modelling of Severe Accidents for LMFR

36

The Modern Combined License Application for the Commercialization of Advanced Fission Technologies

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Confirmation that the work is original and has not been published anywhere else.:

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Topic of the Abstract:

Subtrack 1 Safety approach for LMFR

Technical Session 2.4: Accident Expansion Phase and Long Term Behavior in SFR / 39

Analysis methodologies for the evaluation of ATWS accident on SFR in JAEA - Mechanical consequences during expansion phase of the accident -

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Confirmation that the work is original and has not been published anywhere else.:

Yes

Topic of the Abstract:

Subtrack 2 Analysis and Modelling of Severe Accidents for LMFR

Technical Session 2.3: Accident Analysis and Experimental Programs for LFR / 40

Safety analysis of the BREST-OD-300 reactor

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Confirmation that the work is original and has not been published anywhere else.:

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Topic of the Abstract:

Subtrack 2 Analysis and Modelling of Severe Accidents for LMFR

Technical Session 2.3: Accident Analysis and Experimental Programs for LFR / 41

Development of drift-flux correlations for vertical forward bubble column-type gas-liquid lead-bismuth two-phase flow

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Confirmation that the work is original and has not been published anywhere else.:

Topic of the Abstract:

Subtrack 2 Analysis and Modelling of Severe Accidents for LMFR

Technical Session 2.3: Accident Analysis and Experimental Programs for LFR / 42

Severe accidents investigations for lead fast reactors in Romania

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Confirmation that the work is original and has not been published anywhere else.:

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Topic of the Abstract:

Subtrack 2 Analysis and Modelling of Severe Accidents for LMFR

Technical Session 1.3: Safety Approach for LFR / 43

Safety approach of the Westinghouse lead fast reactor

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Confirmation that the work is original and has not been published anywhere else.:

Yes

Topic of the Abstract:

Subtrack 1 Safety approach for LMFR

Technical Session 2.2: Initiation and Transition Phases of Severe Accidents of SFR / 46

Status of the SAS4A code metallic fuel models for the simulation of severe accidents in liquid metal cooled fast reactors

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Confirmation that the work is original and has not been published anywhere else.:

Yes

Topic of the Abstract:

Subtrack 2 Analysis and Modelling of Severe Accidents for LMFR

Technical Session 2.3: Accident Analysis and Experimental Programs for LFR / 47

Modelling of the lead-cooled fast reactor accidents with the EU-CLID/V2 multiphysics code

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Confirmation that the work is original and has not been published anywhere else.:

Yes

Topic of the Abstract:

Subtrack 2 Analysis and Modelling of Severe Accidents for LMFR

Opening Session / 49

IAEA Welcome Remarks

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Country of origin:

Organization:

Confirmation that the work is original and has not been published anywhere else.:

Topic of the Abstract:

Opening Session / 50

Objective of the Meeting

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Country of origin:

Organization:

Confirmation that the work is original and has not been published anywhere else.:

Topic of the Abstract:

Opening Session / 51

Administrative Remarks

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Introduction of the participants
Approval of the agenda
Appointment of the chairs

Country of origin:

Organization:

Confirmation that the work is original and has not been published anywhere else.:

Topic of the Abstract:

Closing Session / 52

Technical Meeting Wrap-Up Facilitated by Session Chairs

Country of origin:

Organization:

Confirmation that the work is original and has not been published anywhere else.:

Topic of the Abstract:

Closing Session / 54

Closing Remarks by the IAEA

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Country of origin:

Organization:

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Topic of the Abstract:

56

Social Event - Reception hosted by the IAEA

Country of origin:

Organization:

Confirmation that the work is original and has not been published anywhere else.:

Topic of the Abstract:

Technical Session 2.3: Accident Analysis and Experimental Programs for LFR / 58

Modeling of severe accidents for sodium and lead cooled reactors

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Organization:

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Yes

Topic of the Abstract:

Subtrack 2 Analysis and Modelling of Severe Accidents for LMFR

Closing Session / 60

Outputs from the Technical Meeting and General Discussion

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Plans for the development of the two TECDOCs and advice for possible future IAEA activities.

Country of origin:

Organization:

Confirmation that the work is original and has not been published anywhere else.:

Topic of the Abstract:

Technical Session 1.1: Related IAEA and International Activities / 61

Consideration of Non-Water Cooled Reactors and SMR Safety in the IAEA Safety Standards

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Confirmation that the work is original and has not been published anywhere else.:

Topic of the Abstract:

Technical Session 1.1: Related IAEA and International Activities / 62

IAEA activities in the field of fast reactor technology

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Organization:

Confirmation that the work is original and has not been published anywhere else.:

Topic of the Abstract:

Technical Session 1.3: Safety Approach for LFR / 63

ENEA contribution to the development of GIF Safety Design Criteria for LFR

Country of origin:

Organization:

Confirmation that the work is original and has not been published anywhere else.:

Topic of the Abstract:

Technical Session 2.3: Accident Analysis and Experimental Programs for LFR / 64

Experimental and Modelling and simulation activities supporting the development of LFR technology

Country of origin:

Organization:

Confirmation that the work is original and has not been published anywhere else.:

Topic of the Abstract:

Technical Session 3: Regulatory Experience and Activities / 65

Safety review experience of PFBR and development of Safety Code on Design of FBRs

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Confirmation that the work is original and has not been published anywhere else.:

Topic of the Abstract:

Technical Session 1.2: Safety Approach for SFR / 66

Prevention and Mitigation Measures for Severe Accidents of China Fast Reactor

Country of origin:

Organization:

Confirmation that the work is original and has not been published anywhere else.:

Topic of the Abstract:

Technical Session 1.2: Safety Approach for SFR / 67

Consideration of severe accidents in the past French SFR program

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Organization:

Confirmation that the work is original and has not been published anywhere else.:

Topic of the Abstract:

Technical Session 1.2: Safety Approach for SFR / 68

ARC-100 Commercial Demonstration Unit Optimizations for Decay Heat Removal Systems to Accommodate Accident Scenarios

Country of origin:

Organization:

Confirmation that the work is original and has not been published anywhere else.:

Topic of the Abstract:

Technical Session 1.3: Safety Approach for LFR / 69

An introduction to NewCleo LFR design and initial safety considerations

Country of origin:

Organization:

Confirmation that the work is original and has not been published anywhere else.:

Topic of the Abstract:

Technical Session 1.1: Related IAEA and International Activities / 70

Development of Safety Design Criteria and Safety Design Guidelines for the Sodium cooled Fast Reactor within the Generation IV International Forum

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Organization:

Confirmation that the work is original and has not been published anywhere else.:

Topic of the Abstract:

Technical Session 3: Regulatory Experience and Activities / 71

Assessment of severe accident for SFR projects developed in France

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Confirmation that the work is original and has not been published anywhere else.:

Topic of the Abstract:

Technical Session 2.2: Initiation and Transition Phases of Severe Accidents of SFR / 72

Discussion & Session Wrap Up