# 5th Joint Nordic Fusion Energy Seminar 2025

## DAY 1 Tuesday 17 June 2025

**All plenary sessions are in the auditorium Jiehkkevarri**

| **08:30 - 10:50** | **Plenary session: General Overview Talks** | **Chair: O. E. Garcia** |
|---|---|---|
| 08:30 | Odd Erik Garcia, UiT, NO | Introduction and welcome |
| 08:35 | Richard Pitts, ITER | ITER construction progress and 2024 rebaselining |
| 09:30 | Gianfranco Federici, EUROfusion | Vision and mission of the EUROfusion consortium |
| 10:20 | David Maisonnier, IZI Fusion/Chair of IEA FPCC | Fusion strategies worldwide |

**10:50-11:15 Coffee Break**

| **11:15 - 12:15** | **Plenary session: Burning Plasma Physics (25+5)** | **Chair: T. Tala** |
|---|---|---|
| 11:15 | Antti Snicker, VTT, FI | Fast-ion induced tungsten sputtering in STEP and ITER |
| 11:45 | Linus Hägg, UU, SWE | Neutron spectroscopy measurements of JET DT plasma |

**12:15-13:15 Lunch**

| **13:15 - 14:15** | **Plenary session: Space Physics and EISCAT_3D (25+5)** | **Chair: T. Tala** |
|---|---|---|
| 13:15 | Juha Vierinen, UiT, NO | Ionospheric radar remote sensing and EISCAT_3D |
| 13:45 | Asbjørn Clod, DTU, DK | Parametric instabilities of microwave beams in fusion plasmas |

| **14:15 - 15:55** | **Plenary session: Transport and Turbulence (20+5)** | **Chair: S. K. Nielsen** |
|---|---|---|
| 14:15 | Audun Theodersen, UiT, NO | Turbulence and transport in the scrape-off layer |
| 14:40 | Antti Salmi, VTT, FI | Intrinsic torque and momentum transport studies on TCV tokamak |
| 15:05 | Johan Anderson, RISE/Chalmers, SWE | Nonlinear transport cross-phase and zonal modes |
| 15:30 | Mathias Wiesenberger, DTU, DK | Full device gyro-fluid turbulence simulations |

**15:55-16:30 Coffee Break**

**16:30 - 18:10 Parallel session: PWI, Remote Maintenance, Diagnostics & Fast Particles (20+5)**

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| | **Plasma-Wall Interactions** | **Chair: P. Strand (Auditorium)** |
| 16:30 | Fredric Granberg, UH, FI | Computational Study of Sputtering Processes of Fusion Relevant Materials |
| | Eduardo Pitthan, UU, SWE | Ion-Solid Interactions in Plasma-Facing Materials: Impact on Simulation-Based Sputter Yields |
| | Svitlana Rudchenko, DTU, DK | Thermal stability of powder metallurgically manufactured tungsten fiber-reinforced tungsten composites |
| | Juan Manuel Losada, UiT, NO | Far-SOL profile broadening and flattening in Alcator C-Mod and the role of blob structures |
| | **Remote Maintenance** | **Chair: T. Tala (Tromsdalstinden)** |
| 16:30 | Karoliina Salminen, VTT, FI | Status of remote maintenance work package and initial R&D plans for 2026-2027 |
| | Christoffer Sloth, SDU, DK | Model-Based Control for Safe Remote Maintenance |
| | Huapeng Wu, LUT, FI | The test rigs and results in LUT |
| | Xuping Zhang, AU, DK | Robotic Manipulation and Interaction: Design, Modelling, and Control powered by AI and Digital Twin Technology |
| | **Fast Particles and AI** | **Chair: A. Theodorsen (Store Blaamann)** |
| 16:30 | Taina Kurki-Suonio, Aalto, FI | Effect of SOL plasma on beam ion dynamics in W7-X |
| | Aaro Järvinen, VTT, FI | Scalable simulation-based inference framework for large-scale model validation in fusion |
| | Tommi Lyytinen, VTT, FI | Optimisation of tritium breeding and neutron shielding for advanced stellarators |

**19:00 Seminar Dinner at restaurant Skirri in the center of Tromsø**

# DAY 2 Wednesday 18 June 2025

| **8:30 – 9:45** | **Plenary session: Fusion and Nuclear Technologies (20+5)** | **Chair: T. Tala** |
|---|---|---|
| 8:30 | Jari Likonen, VTT, FI | LIBS campaign in JET in 2024 |
| 8:55 | Per Petersson, UU, SWE | Investigations of Boron and Tungsten Deposits for Plasma Facing Mirrors and Materials |
| 9:20 | Christian Schlette, SDU, DK | Remote handling of breeding blankets with immediate impact on industry |

**9:45-10:15 Coffee Break**

| **10:15-12:30** | **Parallel Session: EUROfusion student & grantee elevator talks (10+5)** | |
|---|---|---|
| 10:15 | **Plasma Physics** | **Chair: P. Strand (Auditorium)** |
| | Amanda Bruncona, VTT, FI | Machine learning surrogate model for peeling-ballooning pedestal MHD stability |
| | Synne Brynjulfsen, UiT, NO | Numerical simulations of turbulence and blob structures in the tokamak SOL |
| | Arnaud Lafay, KTH, SWE | Effect of resistivity in pedestal predictions with Europed |
| | Johan Kølsen de Witt, DTU, DK | Wave propagation and trapping in linear plasma devices |
| | Roni Mäenpää, Aalto, FI | Deuterated ammonia formation, transport and dissociation in a nitrogen-seeded, Ohmic JET low-recycling plasma |
| | Simon Bruhn, SDU, DK | Using AI for approximating inverse models for CTS diagnostics |
| | Michail Marios Skyllas, Chalmers, SWE | Gyrokinetic Modelling of L-mode scenarios on Asdex-Upgrade |
| | Anna Niemelä, VTT, FI | Machine learning methods for modelling local, linear gyrokinetic simulations of pedestal turbulence |
| | Boel Brandström, Chalmers, SWE | Integrated Modelling of L-mode scenarios on ASDEX-Upgrade |
| 10:15 | **Technology & Diagnostics** | **Chair: T. Tala (Tromsdalstinden)** |
| | Qiwei Xue, LUT, FI | Advancing human factors and cognitive workload research for the remote operation in fusion reactor environment |
| | Hjalte Durocher, AU, DK | Robotic Maintenance of Breeding Blankets for EU DEMO: Kinematics, Dynamics, and Motion Planning |
| | Van Dung Truong, VTT, FI | Applications of Stochastic Petri Net Modelling in the Early Design of RM Systems |
| | Anton Borup Jakobsen, SDU, DK | Inferring Plasma Parameters from CTS with Data-Driven Models |

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| | Mehdi Heydarishahna, TUNI, FI | Safety-guaranteed fault tolerant control for ITER Remote Handling (RH) manipulators |
| | Daniel Gautam, UU, SWE | In-situ ion beam analysis of deuterium retention in boron containing layers |
| | Ting Wang, LUT, FI | Surrogate modeling and optimization of blanket and integrating with Bluemira |
| | Xingyu Yang, AU, DK | EEG grant: Compliant Interaction Control on Robotic Disassembly for the Maintenance of Fusion Reactors |
| | Qais Saifi, VTT, FI | Efficient Stochastic Modeling in Nonlinear Problems Based on the Finite Cell Weight Variation Method |
| | Jonathan Lars Flocken, DTU, DK | Optimising a Collective Thomson Scattering diagnostic for reactor conditions in DEMO |
| 10:15 | **Materials, Neutronics and Fast Particles** | **Chair: S. Kragh-Nielsen (Store Blaamann)** |
| | Tomi Vuoriheimo, UH, FI | **ERG grant:** Fuel retention in fusion reactors – Effect of boron and trapped hydrogen |
| | Tommaso Rizzi, KTH, SWE | Modelling of explosive PFC damage induced by runaway electrons |
| | Joona Sissonen, VTT, FI | ASCOT5-RFOF for modeling ion-cyclotron heated fast ions |
| | Andrea Valentini, DTU, DK | Fast-ion fusion spectra: analytical models and orbit-wise calculations |
| | Bruno Cattelan, UH, FI | Surrogate models and image recognition for fusion applications |
| | Lorenzo Boccaccia, KTH, SWE | EEG 2025 project: Integrated modelling of boron powder injection and its effect on plasma turbulence |
| | Victor Lindblad, UH, FI | Deuterium effects on defect accumulation and evolution in tungsten |
| | Mette Bybjerg Brock, DTU, DK | Novel neutron detectors for ITER |
| | Nima Fakhrayi Mofrad, Aalto, FI | Modeling molecular sputtering in wall materials: challenges and opportunities |

**12:45-13:45 Lunch**

| **13:45 – 15:00 Plenary session: FPP (30+5)** | | **Chair: O. E. Garcia** |
|---|---|---|
| 13:45 | Marco de Baar, DIFFER, NL | Taking it to the next level: A system perspective on plasma control |
| 14:20 | Devon Battaglia, CFS, US (remote/video) | SPARC, ARC and public-private collaboration |
| 14:55 | Odd Erik Garcia, UiT, NO | Closing |
| 15:30 | Bus transport to the airport | |

Please sign up for the seminar on this web page:
https://5th_joint_nordic_fusion_energy_seminar_2025.axacoair.se/