

2nd Fusion HPC Workshop Program

2-3 December 2021

9:00 CET

First day – 2 December 2021

9:00-9:15	Welcome
	<i>Chair: Mervi Mantsinen</i>
9:15-10:00	Frank Jenko: Accelerating fusion energy research through HPC
10:00-10:30	Kenji Imadera: 5D full-f gyrokinetic simulation with HPC infrastructures
10:30-10:45	Break
	<i>Chair: Julio Gutiérrez</i>
10:45-11:15	Gabriel Pedroche: E-lite 360° neutronics model of the ITER tokamak
11:15-11:45	Pedro Bonilla: On simulation of multi-physics fusion phenomena with Alya, a multipurpose High Performance Computing software
11:45-12:15	Helen Brooks: Scalable Multi-physics for Fusion Reactors with AURORA
12:15-13:15	Lunch Break
	<i>Chair: Shimpei Futatani</i>
13:15-14:00	Marina Becoulet: First principles modelling of magnetohydrodynamic instabilities and their control in magnetic fusion devices using HPC techniques
14:00-14:30	Yasuhiro Suzuki: Development of 3D equilibrium code and its application to stellarators
14:30-14:50	Daniel Suárez: Implementation of a Q2D turbulence model and detection of flow instabilities in liquid metal MHD flows
14:50-15:10	Sita Sundar: Flow shear driven instability in relativistic EMHD regime
15:10-15:25	Break
	<i>Chair: Alejandro Soba</i>
15:25-15:55	James Dark: Modelling hydrogen transport in breeding blankets: influence of trapping effects
15:55-16:15	Ezequiel Goldberg: Massively parallel deterministic neutron transport solver for fusion multiphysics applications
16:15-16:35	Giovanni Lapenta: Full device 6D modelling of magnetically confined plasmas with fully kinetic ions and electrons
16:35-16:55	Julita Inca: Scalable Solution of Linear Elasticity Equations in 3D
16:55-17:15	Oriol Fernández: Experimental validation of a new HPC modelling tool for High Temperature Superconductivity

Second day – 3 December 2021

	<i>Chair: Edilberto Sánchez</i>
9:00-9:45	Tomo-Hiko Watanabe: Exploration of burning plasma confinement physics using the supercomputer Fugaku
9:45-10:15	Hanne Thienpondt: Turbulent heat flux versus density gradient: an inter-machine study with the gyrokinetic code stella
10:15-10:45	Jörg Riemann: Microinstability simulations for stellarators involving kinetic electrons and realistic profiles with the global PIC code EUTERPE
10:45-11:05	Antonio González-Jerez: Electrostatic gyrokinetic simulations in Wendelstein 7-X geometry: benchmark between the codes stella and GENE
11:05-11:20	Break
	<i>Chair: Alejandro Soba</i>
11:20-11:40	Luis E. González: Ab initio study of Helium in the liquid Lithium-Lead eutectic alloy
11:40-12:00	Hussein Assadi: A Survey of Theoretical Methods for Predicting the Thermal Properties of Materials
12:00-12:20	Prashant Dwivedi: Hypervelocity dust impacts on plasma facing materials through molecular dynamics simulations
12:20-12:40	Julio Gutiérrez: Tungsten modelling from large-scale ab-initio methods
12:40-14:10	Lunch Break
	<i>Chair: Edilberto Sánchez</i>
14:10-14:55	William Dorland: First principles transport simulations optimized for reactor concept evaluation and for other faster-than-real-time applications
14:55-15:25	Alexey Mishchenko: Gyrokinetic particle-in-cell simulations of electromagnetic turbulence in the presence of fast particles and global modes
15:25-15:55	Samuele Mazzi: Gyrokinetic study of transport suppression in JET plasmas with MeV-ions
15:55-16:25	Thomas Hayward-Schneider: Anisotropic analytical and numerical distribution functions in the global gyrokinetic particle-in-cell code ORB5
16:25-16:35	Closing & Voting session for the 3 most popular talks (invited & contributed)