SAFE Workshop "Fusion science for clean energy"

Monday 14/10/2024

Grand Copthorne Waterfront Hotel
Room Lyrebird, level 3

Time	Name	email	Affiliation	Title
9:00 - 9:50	Prof Simon Redfern (Dean College of Science NTU) 15' Prof Mathieu Guérin (Attaché de Coopération Scientifique, Embassy of France in Singapore) 15' Dr Jérôme Bucalossi (Head of IRFM, CEA) 15' Xavier Garbet : Introduction 5'			
Overview Chair: Xavier Garbet				
9:50 - 10:30	Alain Becoulet	Alain.Becoulet@iter.org	ITER Organization	The ITER Project: Status and Progress
10:30 - 11:00	**Coffee Break**			
Time	**Name**	**email**	**Affiliation**	**Title**
AI and modelling of fusion plasmas Chair: Yanick Sarazin				
11:00 - 11:20	Virginie Grandgirard	Virginie.GRANDGIRARD@cea.fr	CEA/IRFM	Challenges for exascale plasma turbulence simulations
11:20 - 11:40	Zhisong Qu	Zhisong.qu@ntu.edu.sg	NTU/COS	GYSELA simulation of Alfven eigenmodes
11:40 - 12:00	Feda Almuhisen	Feda.ALMUHISEN@cea.fr	CEA/IRFM	Towards Tokamak Operations Conversational AI Interface Using Large Language Models (LLM)
12:00 - 12:20	Robin Varennes	robin.varennes@ntu.edu.sg	NTU/COS	Data-driven surrogate models for turbulent systems
12:30 - 13:30	**Lunch**			
Plasma physics for fusion Chair: Zhisong Qu				
13:30 - 13:50	Yanick Sarazin	Yanick.SARAZIN@cea.fr	CEA/IRFM	Turbulence self-organization at the edge of tokamak plasmas by means of reduced nonlinear simulations
13:50 - 14:10	Shrish Raj	shrish.raj@ipr.res.in	NTU/COS	Study of impurity transport in edge and SOL regions of a tokamak: Insights from BOUT++ simulations"
14:10 - 14:30	Youngwoo Cho	youngwoo.cho@ntu.edu.sg	NTU/COS	Effect of modulated heat source on diffusive and avalanche-like transport
Mathematics and AI for fusion Chair: Virginie Grandgirard				
14:30 - 14:50	David Pfefferlé	david.pfefferle@uwa.edu.au	UWA	Geometric and topological features of magnetic configurations in fusion devices
14:50 - 15:10	Emanuele Tassi	emanuele.tassi@oca.eu	CNRS/Lagrange	Hamiltonian reduced drift-fluid and gyrofluid models
15:10 - 15:30	François Gay-Balmaz	francois.gb@ntu.edu.sg	NTU/COS	Geometric and Variational Finite Element Discretization in Magnetohydrodynamics
15:30 - 16:00	**Coffee Break**			
Mathematics and AI for fusion (cont.) Chair: François Gay-Balmaz				
16:00 - 16:20	Bastien Manach	bastien.manachp@ntu.edu.sg	NTU/COS	Numerical schemes for multi-material radiation hydrodynamics. Thermodynamics, shocks and robustness
16:20 - 17:30	PhD session - short talks 10' 4 slides			
17:30	**End first day**			

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Tuesday 15/10/2024

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Time	Name	email	Affiliation	Topic and Title
9:00 - 9:10	Introduction: logistics, update, news			
AI and modelling of fusion plasmas Chair: Xavier Garbet				
9:10 - 9:30	Dusit Niyato	DNIYATO@ntu.edu.sg	NTU/CCDS	Generative AI and Large Language Models: Opportunities in Plasma Research
9:30 - 9:50	Yann Camenen	yann.camenen@univ-amu.fr	CNRS/PIIM	Fast and Accurate Simulations of Turbulence for fusion Energy Reactors: update on the FASTER project
9:50 - 10:10	Ruichen Zhang	ruichen.zhang@ntu.edu.sg	NTU/COS&CCDS	Large Language Model for Parameter Range Determination in Gyrokinetic Simulation
10:10 - 10:30	Philippe Ghendrih	philippe.ghendrih@gmail.com	CEA/IRFM	Avalanche transport: from identification to statistics
10:30 - 11:00	**Coffee break**			
AI and modelling of fusion plasmas (cont.) Chair : David Pfefferlé				
11:00 - 11:20	Kyungtak Lim	kyungtak.lim@epfl.ch	EPFL/SPC	Data-driven approach for boundary plasma modelling in fusion devices
11:20 - 11:40	Yuuichi Asahi	yuuichi.asahi@cea.fr	CEA/MdS	Attempt to enhance fluid simulations with AI
11:40 - 12:00	Nicolas Privault	nprivault@ntu.edu.sg	NTU/COS	Branching process approach to the numerical solution of nonlinear partial differential equations
12:00 - 12:20				
12:30 - 13:30	**Lunch**			
AI and modelling of fusion plasmas (cont.) Chair : Kyungtak Lim				
13:30 - 13:50	Kevin Obrejan	kevin.obrejan@cea.fr	CEA/IRFM	Recent advances and optimisations in Gysela
14:10 - 14:30	Chenguang Wan	chenguang.wan@ntu.edu.sg	NTU/COS	An ITG surrogate model using multi-fidelity simulation results
Diagnostics for fusion Chair : Yann Camenen				
13:50 - 14:10	Kunpeng Li	kunpeng.li@ntu.edu.sg	NTU/COS&CCDS	Using AI to enhance the accuracy of coarse-grid simulations
14:30 - 14:50	Stuart Springham	stuart.springham@nie.edu.sg	NTU/NIE	Development of SIGARS gamma-ray diagnostic for WEST
14:50 - 15:10	Philippe Moreau	Philippe.Jacques.MOREAU@cea.fr	CEA/IRFM	Integration of gamma ray spectrometer on the French tokamak WEST
15:10 - 15:30	Ondrej Ficker	ficker@ipp.cas.cz	CAS/IPP	Experience with gamma ray (HXR) diagnostics during RE experiments at European tokamaks
15:30 - 16:00	**Coffee Break**			
Diagnostics for fusion (cont.) Chair : Stuart Springham				
16:00 - 16:20	Rajdeep Rawat	rajdeep.rawat@nie.edu.sg	NTU/NIE	Plasma focus device as a workbench for fusion relevant diagnostics
16:00 - 16:20	Valerian Hall-Chen	Valerian_Hall-Chen@ihpc.a-star.edu.sg	A*STAR	Synthetic DBS diagnostic for gyrokinetic codes
16:20 - 17:00	**Closing**			