



EUROfusion

ITER PHYSICS DEPARTMENT

Agenda (updated 28/01)

Joint Working Session on SOL and PSI Modelling

Involved Work Packages and Projects:
WPJET1/ WPMST1/WPPFC/

Tervaniemi, Finland

28/01–31/01/2020

The objective of this working session is to provide a discussion platform for current modelling and code development activities across the relevant Work Packages and Projects in EUROfusion. The emphasis is on identifying open issues, urgent near- and mid-term requirements, possible collaborations and proposals for supporting experiments within EUROfusion.

Chairs: Dmitriy Borodin and Antti Hakola

LOC: Markus Airila and Antti Hakola

Webpage: <http://simiter.ota.fi/tervaniemi-2020>

Main goals of the meeting:

- Exchange information and knowledge between the participating WPs and ENR projects on SOL, edge and PWI modelling and their interfaces.
- Discuss current key issues for advancing the modelling work across WPs and ENR projects.
- Train new participating PhD students.

Priorities for the meeting in 2020:

- 1) Interconnection between PWI and SOL physics with focus on 3D effects and possible edge/PSI code coupling aiming in deeper insight on recycling and detachment.
- 2) Assessing the accuracy and completeness of the datasets used in the edge, pedestal and PSI codes.
- 3) Implementing additional first wall characteristics as well as ELMs and transients into plasma-surface interaction codes.
- 4) Understanding global erosion/retention/migration picture in tokamaks.
- 5) Impact of turbulence: how to treat this in the edge modelling.

1. Tuesday (28/01):

08:30-10:00		Transportation from Helsinki to Tervaniemi
10:20-10:30	Antti Hakola / Dmitriy Borodin / Markus Airila	Welcome words

Session A: Plasma boundary and SOL modelling

Session organisers: Marco Wischmeier (marco.wischmeier@ipp.mpg.de)
Sven Wiesen (s.wiesen@fz-juelich.de)

10:30-10:45	Marco Wischmeier / Sven Wiesen	Introduction to Session A
10:45-11:15	Richard Kembleton	Impact of Exhaust on DEMO Design Restrictions, and Divertor Engineering Unknowns
11:15-11:45	Leena Aho-Mantila	WPADC exhaust modelling overview
11:45-12:10	Dieter Boeyaert	EAST DDN Neon seeded experiments in the EU-CN framework
12:10-12:35	Gloria Falchetto	Adding turbulence physics in edge plasma codes: progress in 2 complementary approaches
12:35-14:15		Lunch break and check-in
14:15-14:40	Irina Borodkina	First SOLPS simulations for COMPASS Upgrade tokamak
14:40-15:10	Mathias Groth	Impact of hydrogen isotope species on the onset in detachment in JET Ohmic plasmas
15:10-15:35	Niels Horsten	Hybrid fluid-kinetic model for the hydrogenic plasma edge atoms in SOLPS-ITER (E-TASC EIRENE)
15:35-16:00	Mirko Wensing	SOLPS-ITER drift simulations for the TCV tokamak
16:00-16:30		Coffee break
16:30-16:55	Peter Manz	Statistical correlations, filaments and L-mode transport
16:55-18:30	All	Session A discussion
18:30-19:30		Spare time
19:30-		Dinner time

2. Wednesday (29/01):

Session B: SOL modelling, SOL-PWI coupling and 3D effects

Session organisers: Derek Harting (derek.harting@ukaea.uk)

Tilmann Lunt (tilmann.lunt@ipp.mpg.de)

09:00-09:15	Derek Harting / Tilmann Lunt	Introduction to Session B
09:15-09:45	Tilmann Lunt	Alternative divertor configurations in the future upper divertor of ASDEX Upgrade
09:45-10:15	Victoria Winters	EMC3-EIRENE modeling of impurity transport in W7X & and prospects for further code development
10:15-10:45	Dmitriy Borodin	Atomic and molecular data in EIRENE code and perspectives of further development
10:45-11:05		Coffee break
11:05-11:35	Giulio Rubino	Study of the SOL plasma in high Delta Nitrogen seeded experiment in JET and in JT-60SA Scenario 3 with metallic wall
11:35-12:30	All	Session B discussion
12:30-14:00		Lunch Break

3. Wednesday (29/01):

Session C: Plasma-wall interaction and material migration modelling

Session organisers: Sebastijan Brezinsek (s.brezinsek@fz-juelich.de)

Andreas Kirschner (a.kirschner@fz-juelich.de)

Klaus Schmid (klaus.schmid@ipp.mpg.de)

14:00-14:15	Klaus Schmid	Introduction to Session C
14:15-14:45	Klaus Schmid	WalIDYN3D for W7X
14:45-15:15	Juri Romazanov	ERO2.0 for W7X
15:15-15:45	Henri Kumpulainen	Implementation and Implications of drifts in DIVIMP
15:45-16:15		Coffee break
16:15-16:45	Derek Harting	Future of EIRENE-TIM
16:45-17:15	Victoria Winters (for Sebastijan Brezinsek)	Challenges of seeding experiments in W7X
17:15-18:15	All	Session C discussion

18:15-19:00		Spare time and orienteering
19:00-		Sauna and snacks

4. Thursday (30/01):

Session D: Data production and model development for PSI codes

Session organisers: Dmitriy Borodin (d.borodin@fz-juelich.de)
Yves Ferro (yves.ferro@univ-amu.fr)

09:00-09:15	Yves Ferro / Dmitriy Borodin	Introduction to Session D
09:15-10:00	Kalle Heinola	Overview of the IAEA data collection and validation activities
10:00-10:30	Juri Romazanov (for Alina Eksaeva)	AMNS data utilized in the ERO/ERO2.0 code: erosion, A&M spectroscopy
10:30-10:50		Coffee break
10:50-11:15	Etienne Hodille	Sputtering and reflection data of BeO irradiated by D ions from MD simulations
11:15-11:40	Michael Probst	Data for Be & W molecules in PFCs and boundary plasma
11:40-12:05	Martin O'Mullane	Atomic and molecular data and CRMs provided in ADAS for fusion applications
12:05-12:45	All	Session D discussion
12:45-14:15		Lunch Break

5. Thursday (30/01):

Session E: Effect of surface shaping and morphology on modelling PSI processes

Session organisers: Antti Hakola (antti.hakola@vtt.fi)
Karl Krieger (krieger@ipp.mpg.de)

14:15-14:30	Antti Hakola / Karl Krieger	Introduction to Session E
14:30-14:50	Michael Komm	PIC modelling of surface potential and ion trajectories at non-planar PFC surfaces

14:50-15:20	Dmitriy Borodin (for Alina Eksaeva)	Effect of surface morphology on erosion of metallic plasma-facing materials modelled with the 3D Monte-Carlo ERO code
15:20-15:50	Udo v. Toussaint	SDTrimSP (3D) simulations with newly implemented gyromotion
15:50-16:20		Coffee break
16:20-16:50	Rodrigo Arredondo Parra	SDTrimSP analysis of the influence of W surface enrichment and surface morphology on the sputter yield of EUROFER
16:50-17:20	Jamie Gunn	Local heat load distribution at planar toroidal-poloidal bevelled monoblocks on the ITER divertor outer vertical target
17:20-18:20	All	Session E discussion
18:20-19:30		Spare time
19:30-		Working session dinner (~30 €/person)

6. Friday (31/01):

Session F: Summary

Session organiser: Antti Hakola (antti.hakola@vtt.fi)
Dmitriy Borodin (d.borodin@fz-juelich.de)

09:00-10:30	All	Impulse Coffee and group work
10:30-11:00	All	Summary A+B "Plasma Boundary and 3D"
11:00-11:30	All	Summary C+D+E "PSI and materials"
11:30-12:00	All	General Discussion, meeting conclusions, outlook
12:00-13:30		Lunch break
13:30-14:45		Transportation from Tervaniemi to Helsinki airport