EUROfusion

Status of MET Project

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Status of MET Project

- Activity report in 2019 has been approved on IDM (https://idm.euro-fusion.org/?uid=2MLBBL) and can be consulted on MET Webpage (https://www.afs.enea.it/zonca/METproject/Activities.html)
- This presentation reports a brief summary of Scientific Deliverables and achievements
- More details on Objectives and Milestones in further presentation this Wednesday (03/25)

Status of WP1&WP2

Scientific deliverable *(2019 deliverables as specified in the Task Agreement)*	**Achieved: Fully/Partly/Not**	**Evidence for achievement, brief reason for partial or non-achievement**
WP1-D1: Explicit expressions of EP fluxes in phase space as input to transport code (2019)	Fully	The explicit form of fluxes has been described in a number of invited, oral and poster contributions with the following ids: 22428, 23867, 23610
WP2.1-D1: Verified transport module with explicit expression of EP fluxes and assuming fluctuating fields and particle distributions from numerical simulation (2019).	Fully/Partly	Collisionless transport has been calculated and the results are presented in the following contributions: 23867, 24315. The deliverable is almost fully achieved, in the sense that only collisionless transport has been computed: collisional transport was deliberately postponed to tackle earlier the milestone WP1-M4, which has been partially completed ahead of original planning. Importance of self-consistent transport analysis was verified for the beam-plasma system [22452,22971, 22972]. Benchmark using fully assigned transport coefficient has to be finalized in January 2020.

Status of WP3

Scientific deliverable *(2019 deliverables as specified in the Task Agreement)*	**Achieved: Fully/Partly/Not**	**Evidence for achievement, brief reason for partial or non-achievement**
WP3-D1: Well documented reference cases for various scenarios; data base providing linear stability properties for all participating codes (2019).	Fully	MET Webpage: See link at https://www.afs.enea.it/zonca/METproject/WP3/WP3_1/ Optimised experiments emphasizing MET needs were successfully carried out at AUG; JT-60U and ITER cases described on web-pages open to all MET members; linear LIGKA/HAGIS analysis has been started, partially completed; partially carried out within IMAS framework; LIGKA/HAGIS, ORB5, HMGC, MEGA and HYMAGIC benchmarks based on the AUG scenario are in an advanced stage. A reference scenario for DTT has been also made available.

Status of WP4

Scientific deliverable *(2019 deliverables as specified in the Task Agreement)*	**Achieved: Fully/Partly/Not**	**Evidence for achievement, brief reason for partial or non-achievement**
WP4-D1: linear and nonlinear impact of Energetic Particles (EP) on Tearing Modes (TM) through a reduced model (Dec. 2019)	Partly	So far, only the impact of TM on EP has been analyzed. The analysis of the reverse phenomenon (linear and nonlinear stabilization/destabilization of TM by EP) is currently ongoing
WP4-D2: upgrade the guiding-centre tracking code to include non axi-symmetric and magnetic perturbations (Dec. 2020)	Fully	This was a deliverable for 2020, but which has been achieved ahead of schedule

Discussion #1

- MET Project is well underway with its timely achievement of Scientific Deliverables
- This mid-term workshop has the main aim of providing updates since the 2019 Activity Report and to plan ahead action for the completion of the Research Plan by the end of 2020.

Discussion #2

- Theoretical framework is complete and provides a solid basis for further analyses
- Well documented reference cases are provided for AUG, DTT, ITER, JT-60U for code benchmark and V&V
- Fundamental tests on simulation tools are completed or underway; and provide the background for achieving MET deliverables