Thrust 3: MHD & REs
Report to FSD Science Coordination Meeting in Preparation for 2022 – WPAC Sc. Goals 2022

Carlo Sozzi

Thrust 3 meeting on 24th June

- Participants
  - Carlo Sozzi (Facilitator, WPSA)
  - Emmanuel Joffrin (WPTE)
  - Antti Hakola (WPTE)
  - Ivan Calvo (WP7X)
  - Giuseppe Calabrò (WPPWIE)
  - Matthias Hoelz (TSVV8)
  - Ericc Nardon (TSVV9)
  - Alexey Mishchenko (TSVV10)
  - Rui Coelho (Sc. Board)
  - Fulvio Zonca (Sc. Board)
  - Mattia Siccinio (DEMO)
  - Francesco Maviglia (DEMO)
- Agenda
  - Summaries of the programme of the work packages / task force activities focused on the link with the involved TSVVs (contacts, needs, data for code validation)
  - Summaries of the TSVVs development activities and needs, including the ones for validation
  - Discussion

TSVV-01: *Physics of the L-H Transition and Pedestals*

TSVV-02: *Physics Properties of Strongly Shaped Configurations*

TSVV-03: *European boundary plasma modelling towards reactor relevant simulations*

TSVV-04: *Plasma Particle/Heat Exhaust: Gyrokinetic/Kinetic Edge Codes*

TSVV-05: *Neutral Gas Dynamics in the Edge*

TSVV-06: *Impurity Sources, Transport, and Screening*

TSVV-07: *Plasma-Wall Interaction in DEMO*

TSVV-08: *Integrated Modelling of MHD Transients*

TSVV-09: *Dynamics of Runaway Electrons in Tokamak Disruptions*

TSVV-10: *Physics of Burning Plasmas*

TSVV-11: *Validated Frameworks for the Reliable Prediction of Plasma Performance and Operational Limits in Tokamaks*

TSVV-12: *Stellarator Optimization*

TSVV-13: *Stellarator Turbulence Simulation*

TSVV-14: *Multi-Fidelity Systems Code for DEMO*

Outcome of the discussion

- It has been pointed out that the present scheme of organization of the TSVVs and Thrusts is not optimal because the topics treated in the TSVVs and in the WPs participating to the thrust do not match completely. No clear solution or suggestion for this, but worthy to report

- Keep track of specific discussions at the "working level" and inform Thrust3 (but in general the community) (***Back on this)

- Need to find a way to bring at higher level (SB) important results/progresses for benchmarking and reference (example of Orb 5 ITG-KBM turb in TSVV10).

- several of the TSVVs activities are connected with ETS. So there is the question of which kind of support is planned for ETS in EUROfusion

- Need to keep track of the material discussed and to have a place to record the various actions and contacts that may develop in future => suggestion to open a section in the WPAC wiki (***Back on this)

- Not clear which is the scheme to support the mobility needs for the TSVVs

- Material presented and summary available at https://indico.euro-fusion.org/event/1229/ (WPSA indico area since the THRUST indico area was not yet available); will be now moved on the dedicated indico area.

- Next meeting in November

Further remarks

- Diffuse feeling that "high level" meeting (presentation of summaries and related general/generic discussions) have rather mild usefulness and absorb time from the scientific/technical work
- Still the need of developing and keeping bi-(multi-)directional live contacts is clear
- From here suggestions to foster "working level", free-format relations between scientists (experimentalist and modelers) – already occurring in WPTE, WPSA
- This can serve to specify data validation sets and format, and modelling requirements
- …and keep records of easy access, easy traceable of such pieces of work in progress to reduce duplications and increase momentum on common areas of interest
- For this purpose a "discussion area" in the wiki (at TSVV level, or WPAC? Or in the work packages?) could be useful
- Updates about the work in progress in the TSVVs unevenly available in the wiki/indico

- WPs needs for ACH support? e.g. ITER clearly expressed increased for feasibility of installing IMAS & apply in JT-60SA => support from ACH might be required