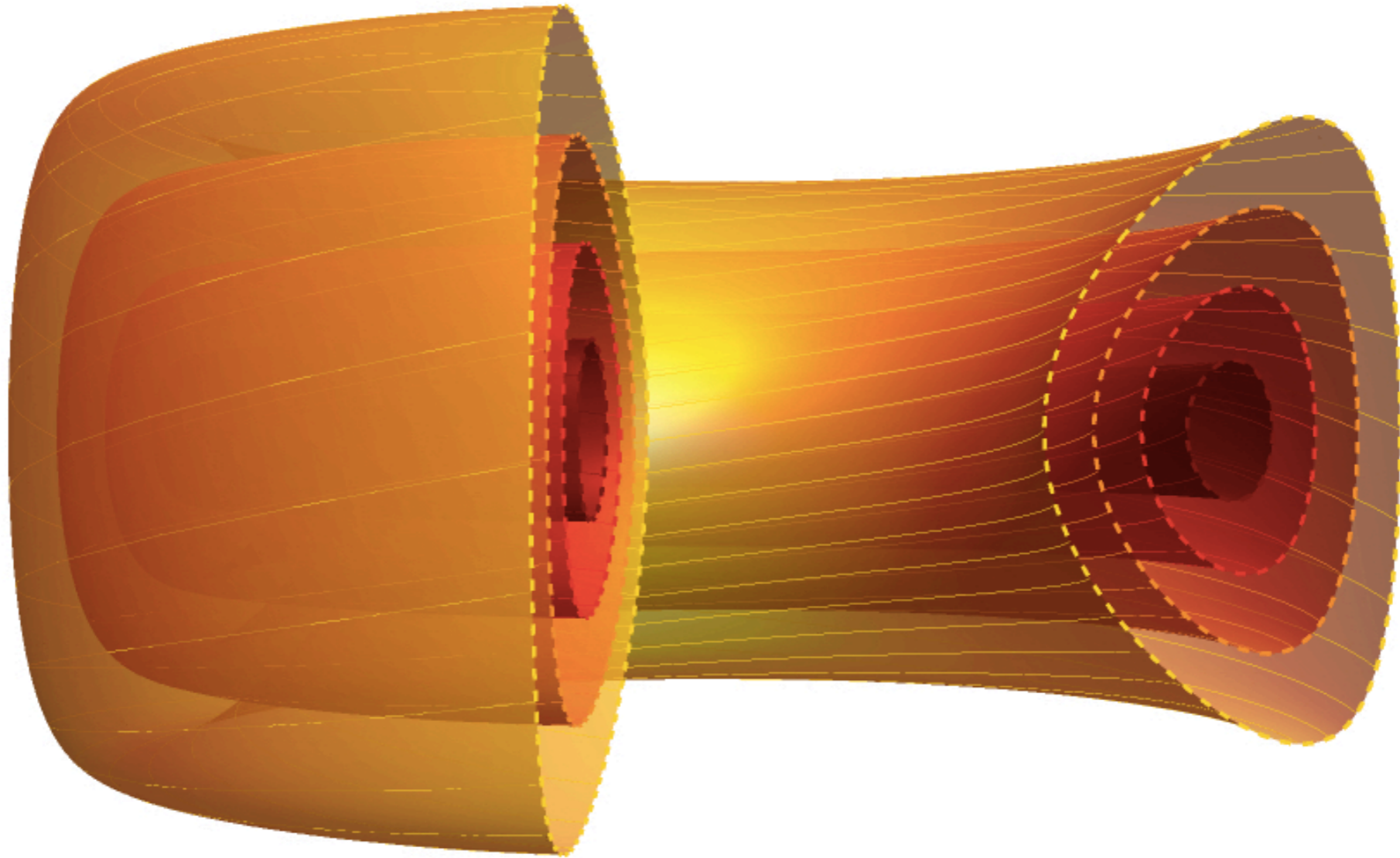


TSVV 2: Negative triangularity Kick-off meeting



Justin Ball
03 May 2021

Agenda

- **Report from TSVV/ACH PI meeting**
- Experimental TCV equilibria
- Roundtable discussion with team members
- Team meetings, schedule, and resources
- Comments, questions?

Report from the TSVV/ACH PI meeting

1. Biggest item was what appears to be a ~30% (?) EUROfusion funding cut [no official communication]
 - ACH start date was delayed until July 1st and ACH ppy is now ramped up gradually over the first three years
 - **In 2021, ppy requested by the TSVVs is more than x2 the ACH ppy**, fortunately our TSVV is unique for requesting little (priorities? specific hub?):
 - 2021: Porting XTOR-K to GPUs and exp. data/validation methodologies
 - 2022: ORB5 to GPUs and exp. data/validation methodologies

Report from the TSVV/ACH PI meeting (contd.)

- TSVV start date was delayed until April 1st
 - ➔ Apparent linear reduction of financial support (i.e. 0.5ppy becomes 0.38ppy)
 - ➔ Not supposed to declare hours on the project before April 1
 - My understanding is that there is flexibility in milestones/deliverable due dates due to start delay and if it can be connected to a lack of anticipated ACH support
2. Strong emphasis on developing EUROfusion standard software codes, which doesn't really include us

Report from the TSVW/ACH PI meeting (contd.)

3. Work Package Tokamak Exploitation (WPTE) RT07 (Negative Triangularity scenarios as an alternative for DEMO)

- Scientific objectives:

1. Advanced MHD equilibrium and stability analysis of TCV and AUG plasmas
2. Develop similar scenarios in TCV and AUG to support iDTT design
3. Investigate power exhaust and detachment with simulations (2021) and in experiments in AUG and TCV (2022)
4. Provide answers on the plasma core confinement properties (density limit, plasma current limit, ...) to the EUROfusion Ad-hoc Group

- No experimental time in 2021, but resources for data analysis and modeling

Report from the TSVV/ACH PI meeting (contd.)

4. TSVVs are grouped into one of five “thrust groups” that are more closely coupled
 - We are in “Thrust 5: Whole-Device Modeling” with TSVV 11 (Validated Frameworks for the Reliable Prediction of Plasma Performance and Operational Limits in Tokamaks) and TSVV 14 (Multi-Fidelity Systems Code for DEMO)
 - We have important collaborations with almost all TSVVs
5. Some mission funds will be available to TSVV members for travel

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TCV experimental L-mode equilibria

- L-mode shots with $\delta \approx \pm 0.3$, $\kappa \approx 1.4$ (diverted) or $\kappa \approx 1.3$ (limited)

Comp. num.	Description	Constants of comparison	Shot num.	Time (sec)	β_N	P_{NBI} (kW)	q_{95}	I_p (kA)	n_e ($\times 10^{19}$)
1	Diverted, PT	q95, betaN	69515	1.02	0.97	636	3.17	242	4.1
1	Diverted, NT	q95, betaN	69271	0.6	0.94	336	2.9	219	3.2
2	Diverted, PT	q95, Pheat, ne	69515	1.02	0.97	636	3.17	242	4.1
2	Diverted, NT	q95, Pheat, ne	69271	1.35	1.56	643	2.97	217	4.2
3	Diverted, PT	Ip, betaN, ne	69508	1.45	1.12	735	3.31	2.17	4.0
3	Diverted, NT	Ip, betaN, ne	69271	0.6	0.94	336	2.9	2.19	3.2
4	Limited, PT	Ip, betaN, ne	69511	1.5	1.25	1030	3.38	2.28	3.4
4	Limited, NT	Ip, betaN, ne	69273	0.9	1.3	475	2.85	2.28	3.5

- Some shots have Langmuir probe SOL measurements, but not all

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Team meetings

- How frequent should we have whole team meetings? Monthly?
- Informal topical group meetings? Monthly on-demand?
 - Core turbulence: Justin, Peter, MJ, Alberto, Paola Mantica?
 - SOL: Maurizio, (Paola Muscente), Paolo Innocente, (Paolo Ricci)?
 - MHD: Giuliana, Antoine, Hinrich, (Gregorio)?
 - Fast particles: Hinrich, Matteo? Giuliana, (Gregorio)?

Logistics

- Each TSVV has a EUROfusion wiki at
 - <https://wiki.euro-fusion.org/wiki/TSVV-02>
 - Platform to share documents and archive presentations
 - Add all papers, reports, and talks to table
 - Accessible to anyone with an IMS account

Marconi computing time

- Received 100% of our requested amount on the conventional A3 partition:
 - GENE: 375k node-hours = 100k (Alberto) + 125k (Justin) + 150k (MJ)
 - GBS: 175k node-hours
 - HYMAGYC: 100k node-hours
- Received 46% of our requested amount on the C1 GPU partition:
 - ORB5: 80k node-hours
- Allocation period: March 2021- Feb 2022 (A3 allocation is 4% used)

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