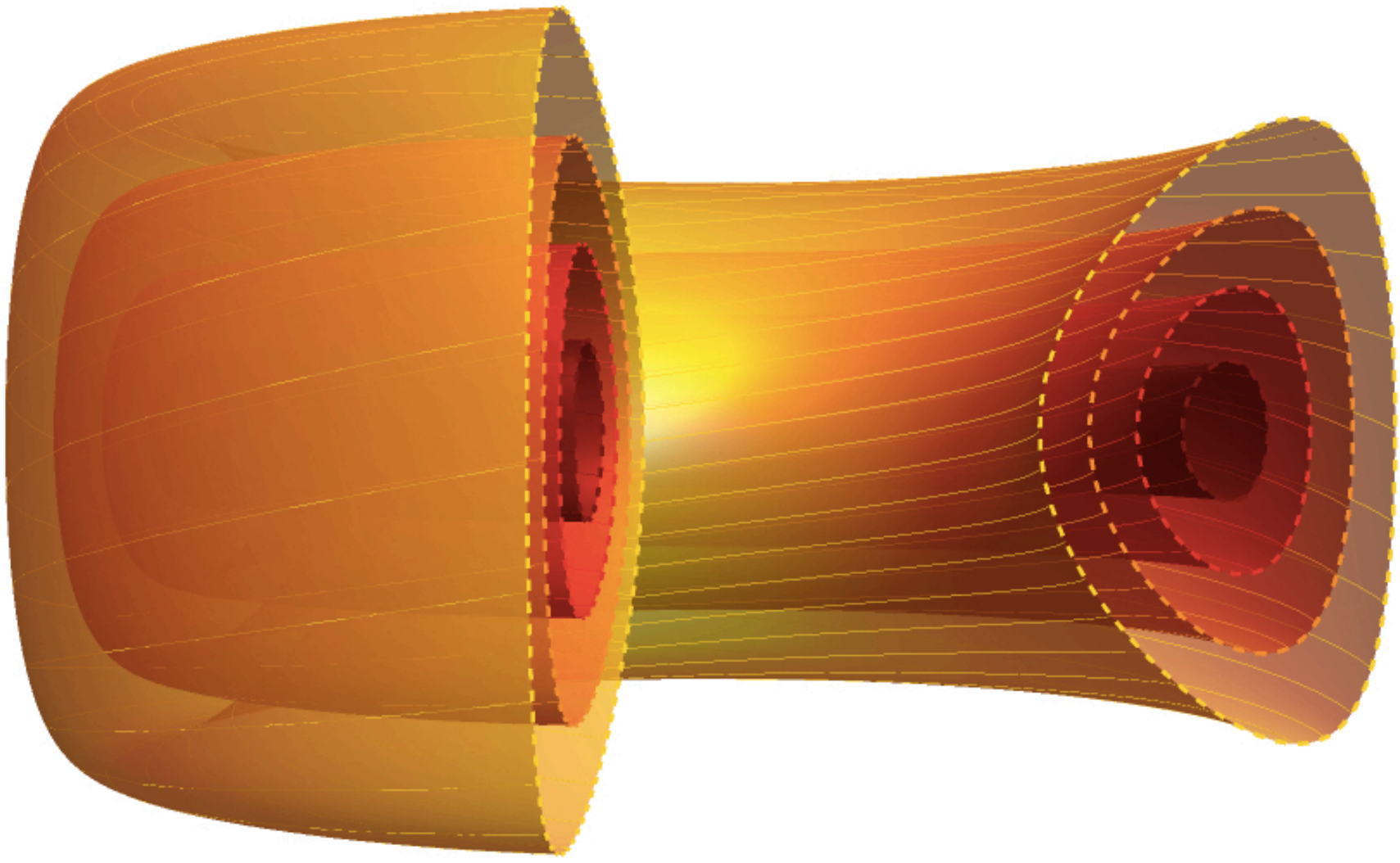
State of the art:
Edge turbulence summary discussion



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2025 Annual TSVV 2 Workshop

17 October 2025

SOL decay width

E. Laribi, et al. *Nucl. Mater. Energy* (2021).
D. Silvagni, et al. *PPCF* (2020).
E. Tonello, et al. *PPCF* (2024).
O. Fevrier, et al. *PPCF* (2024).
P. Ulbl, et al. *Nucl. Fusion* (2025).

- Compared to PT L-mode, SOLEDGE, GBS, TOKAM3X, GENE-X, and a theory-based scaling law (consistent with experimental database) all indicate that NT has a ~30% narrower SOL width when $\delta = 0.3 \rightarrow -0.3$[Kyu,Pao,Laribi,Tonello,Fevrier,Becoulet,Ulbl]

- SOL width in PT H-mode can be a factor of two narrower than for PT L-mode[Silvagni]

- GBS double-null simulations consistent with above, but more power is shared to the inner targets[Kyu]

- Regardless of geometry or regime, cross-field transport is significantly correlated across the separatrix

  - Thus, NT L-mode has longer τ_E than PT L-mode so it will have a narrower λ_q, but the confinement improvement isn't localized in a narrow pedestal just inside the separatrix so it will have a broader λ_q than PT H-mode

Detachment

O. Fevrier, et al. *PPCF* (2024).

- Harder to achieve in NT relative to PT L-mode, but still possible[Gar]

Discussion

P. Ulbl, et al. *Nucl. Fusion* (2025).

- How can theory and simulations be useful for detachment in NT?
- What GENE-X simulations would be useful[Ulbl]?
- Different optimal edge impurity seeding in NT (as there is no longer a minimum heating power that must be preserved)?
- Impact of divertor geometry and wall material and recycling/fueling?
- Double-null studies?