Numerical modelling of edge tokamak plasma : impact of collisionality on turbulence properties

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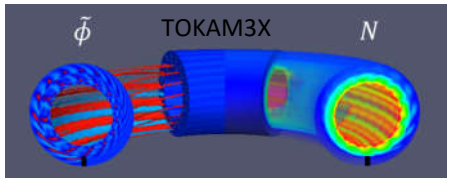
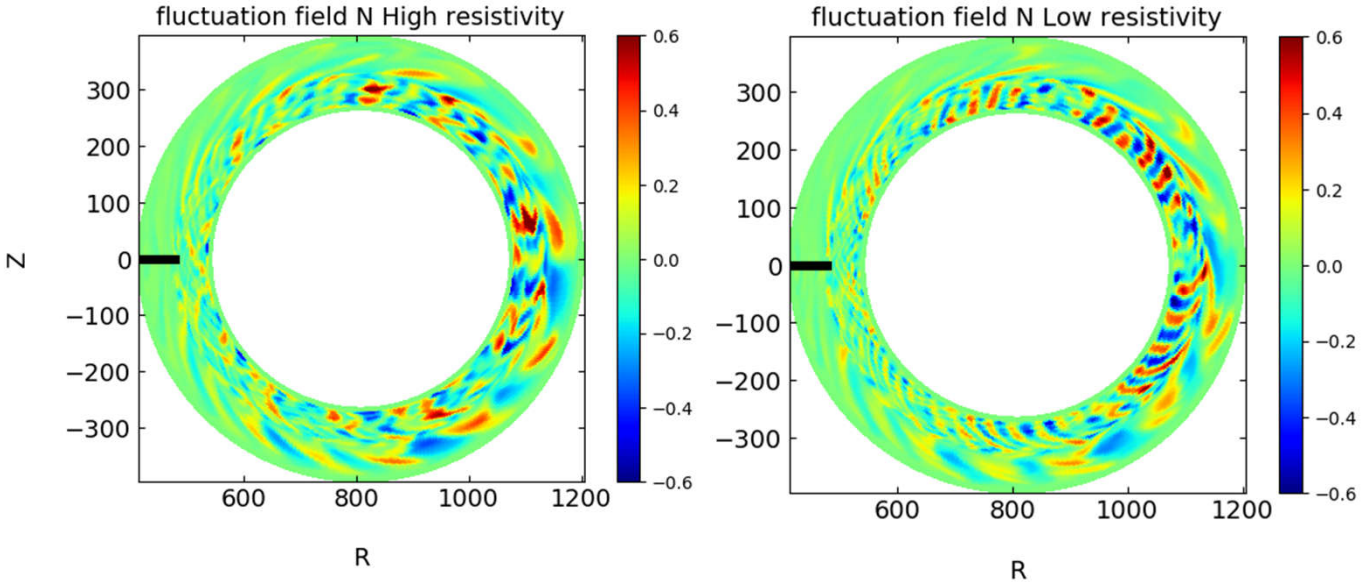
Impact of collisionality on tokamak edge plasma turbulence

- Experimental evidence that the change of collisionality influences the turbulence properties of edge and SOL plasma with impact of mean field profiles (*Carralero D et al. PRL 2015*)
- 3D numerical modelling in limiter geometry with **anisothermal version** of TOKAM3X code.



(P. Tamain et al. *Journal of Computational Physics* 321 ,2016)

Poloidal section of density fluctuation



High collisionality

Low collisionality

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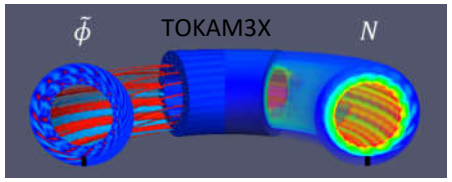

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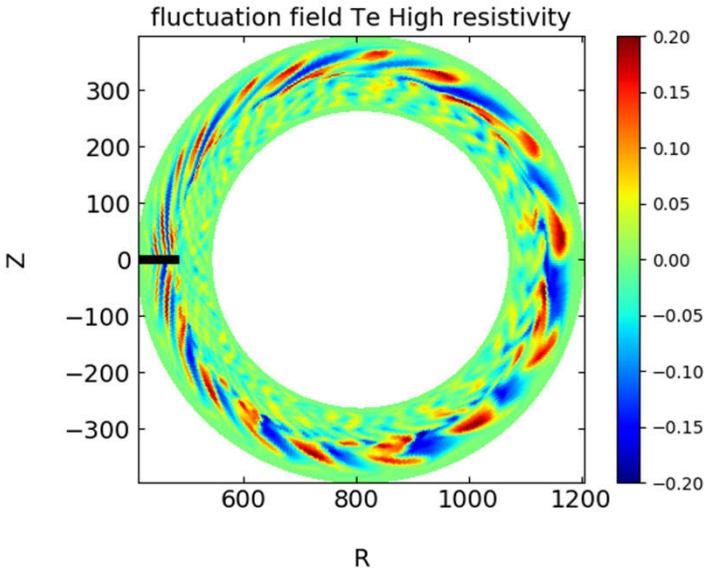
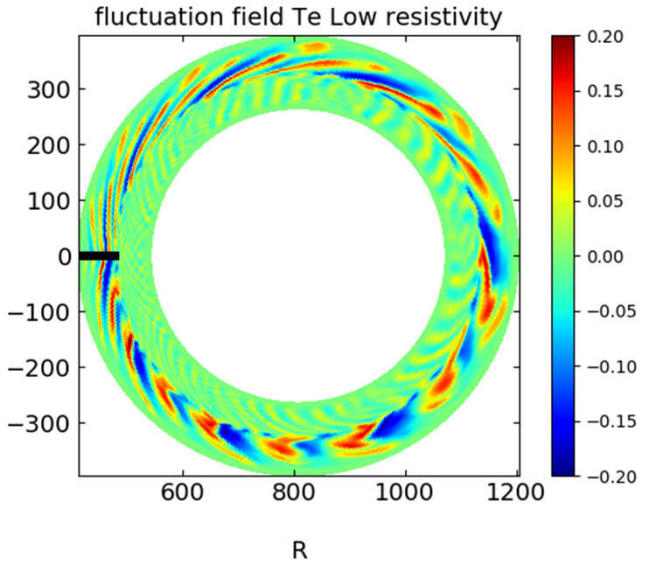
Poloidal section of electron temperature fluctuations



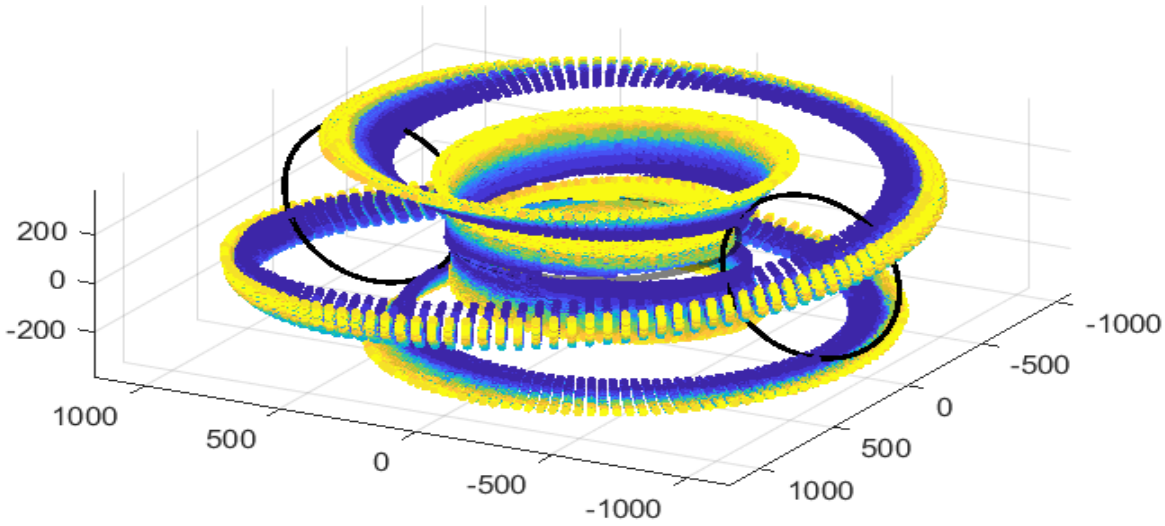
High collisionality



Low collisionality

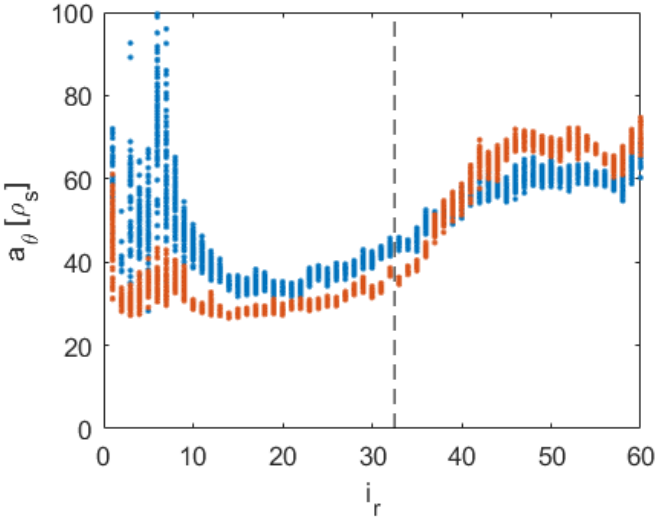
Coherent structure radial propagation

3D Tracking of coherent structure with $N>1.5\sigma_N$



BRAT algorithm described in F. Nespoli, submitted Nuclear Fusion 2019

Poloidal size of blob over radial direction



Low collisionality

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