Abstract Submitted
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Gyrokinetic studies of the outer core region in DIII-D and ASDEX Upgrade discharges TOBIAS GOERLER, DANIEL TOLD, IPP Garching, ANNE WHITE, MIT, CLEMENTE ANGIONI, EMILIANO FABLE, IPP Garching, GREG HAMMETT, PPPL, FRANK JENKO, ELEONORA VIEZZER, IPP Garching, ASDEX UPGRADE TEAM — In order to study the outer core region in DIII-D and ASDEX Upgrade discharges, radially local and non-local gyrokinetic simulations with the GENE code are carried out. Using actual plasma parameters and MHD equilibria and employing as much physics as available, particular focus is placed on the degree to which turbulent features can be validated against the experiments. In the recent years, careful and systematic comparisons have largely demonstrated very good agreement with experiment–except for L-mode discharges where a shortfall of almost one order of magnitude has been reported in the outer core ion heat transport, e.g. in [C. Holland et al., Phys. Plasmas 16, 052301 (2009)]. Therefore, special emphasis is given to confirm or extend these transport underpredictions and explore possible solutions as, e.g., effects of the highly nonlinear nature of the neighbouring edge turbulence [B.D. Scott, Phys. Plasmas 12, 062314 (2005)] or contributions from neighbouring scales (low-k microtearing, short wavelength ITG/TEM/ETG). Comparisons with measured cross phases [A. White et al., Phys. Plasmas 17, 056103 (2010)] will help to attribute a possible shortfall either to a corresponding drop in the fluctuation amplitudes or to differing turbulence types in simulations and experiments.

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