Global 3D Braginskii-based edge simulation of an L-H transition

BEN ZHU, MANAURA FRANCISQUEZ, BARRETT ROGERS, Dartmouth Coll

— We present a milli-seconds long pre L-H transition simulation with the global edge turbulence code GDB. This study was carried out in a simple shifted circular flux surfaces magnetic configuration with IWL Alcator C-Mod parameters. The simulation domain is toroidally and poloidally global and spans $3\ cm$ of the closed-flux region and $2\ cm$ of the scrape-off layer ($3\ cm<r-a<2\ cm$). The plasma is heated in the core region ($r-a<-3\ cm$) and sourced near the separatrix ($r\approx a$). Several interesting features are exhibited in this simulation that concur with experiments, including enhanced $E\times B$ shear flow, suppressed turbulence, inward particle pinch and formation of pedestal via plasma heating. Detailed results and further analysis will be presented in the meeting.

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Ben Zhu
Dartmouth Coll

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