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Towards understanding the role of turbulence on scaling of divertor heat flux profile widths on C-Mod B. CHEN, USTC, X.Q. XU, LLNL, T.Y. XIA, ASIPP, B. LABOMBARD, MIT, M.Y. YE, USTC — The BOUT++ code has been exploited in order to improve the understanding the role of edge turbulent transport on scaling of divertor heat load widths. For the C-Mod EDA H-mode discharges, BOUT++ six-field two-fluid nonlinear simulations show a reasonable agreement of upstream turbulence and divertor target heat flux behavior: a) Distinguished quasi-coherent modes (QCMs) is observed with frequency around 120 kHz, and k_θ around 1.5 rad/cm, which are consistent with experimental measurements; b) For the divertor heat flux, it displays a qualitatively similar shape in the near SOL region, while showing a sharp fall-off in the private flux zone; c) Heat flux width estimated by Eich fitting formula based on plasma current scan is corresponding to experimental scaling law (which are averaged over different time windows to eliminate the uncertainty in the nonlinear initial-value simulations). In order to do consistent scrape-off-layer transport calculations, the 2D fluid code SOLPS has been externally coupled to BOUT++ by using time-averaged turbulent heat flow and transport coefficients measured from BOUT++, detailed description of main simulation results will be shown.

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