Abstract Submitted
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Investigation of Divertor Heat Flux Width with Different Upstream Pedestal for CFETR.[1] ZEYU LI, Peking University, XUEQIAO XU, LLNL, VINCENT S. CHAN, USTC, YIREN ZHU, Hust, JIALE CHEN, ASIPP, XUEYUN WANG, Peking University — Investigation on the turbulent transport dynamics in Scrape-off-layer (SOL) and divertor heat flux width prediction is performed in BOUT++ simulation [1]. Further study on the impact of different pedestal structure on China Fusion Experimental Test Reactor (CFETR) divertor heat flux width is performed using BOUT++ six-field turbulence and transport module. Different scenarios of CFETR, such as steady state operation and hybrid scenario, are investigated separately to identify relation between upstream pedestal condition and downstream divertor heat flux width. Furthermore, the study of CFETR R7.2m 1GW hybrid operation is carried out by changing the pedestal height and width meanwhile keeping the core plasma profile unchanged. Higher pedestal is typically more unstable, which leads to larger turbulent flux transported crossing the separatrix into the SOL. This leads to the broadening of the SOL perpendicular heat decay width. Pedestal structure is important in determining the divertor heat flux width. It is found in CFETR that grassy ELM operation might be favorable for broadening the divertor heat flux width. Further study needs to be made to optimize the divertor heat load and confinement. [1] Zeyu Li et al. 2019 Nucl. Fusion 59 046014.

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