Abstract Submitted
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Characterizing heat flux widths in a closed divertor using Surface Eroding Thermocouples[1] JUN REN, DAVID DONOVAN, University of Tennessee-Knoxville, HUIQIAN WANG, General Atomics, JON WATKINS, Sandia National Laboratories, CHRIS CHROBAK, CHRIS MURPHY, DAN THOMAS, REJEAN BOIVIN, General Atomics, DIII-D TEAM — The peak heat flux on the divertor target is largely determined by the heat flux width. To characterize the heat flux width in a closed divertor, an array of surface eroding thermocouples (SETCs) were installed in the Small Angle Slot (SAS) divertor in DIII-D. Using the Eich fitting equation, a heat flux width ˜2.5mm was derived from experimental heat flux profiles measured by SETC in SAS experiments, similar to the heat flux width predicted by a heuristic drift-based model and the Eich scaling law. The heat flux width in the SAS divertor and on the lower divertor have been compared for the same plasma current in the unfavorable Bt direction. Wider heat flux width was found in Helium plasma than it in Deuterium plasma discharges, possibly due to larger ion gyro-radius of Helium. The upgraded SETCs provide a clearer picture of heat flux in SAS divertor than ever before. The dependence of heat fluxes on divertor closure, plasma current, plasma density, heating power and drift effect will be further investigated in SAS by using SETC.

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Jun Ren
University of Tennessee-Knoxville

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