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Maximizing Heat Dissipation via Target Optimization of the Small-Angle Slot Divertor[1] BRENT COVELE, FEDERICO HALPERN, General Atomics, LIVIA CASALI, Oak Ridge Associated Universities, JOHN CANIK, Oak Ridge National Laboratory, DAN THOMAS, HOUYANG GUO, General Atomics — The planned SAS 2 divertor uses a combination of grazing target angles and closure to direct recycling neutrals near the strike point, thus facilitating detachment onset. SAS 2 should also provide adequate pumping efficiency to be consistent with high-power steady-state scenarios on DIII-D. Initial SOLPS results indicate significantly higher neutral densities and lower electron temperatures in the SAS 2 slot, compared to a closed reference divertor model with baseline plasma profiles appropriate for high power. A systematic optimization of the parameterized SAS 2 target shape is performed in SOLPS to further reduce target heat fluxes and temperatures at lowest upstream density. To speed up the target optimization process, target neutral densities calculated by Eirene act as a performance metric by proxy for detachment facilitation. The efficacy of this proxy metric is discussed. Results are also presented from SAS 2 neutral pumping simulations in Eirene with a stationary background plasma. The feasibility of mutually satisfactory particle control and detachment control is discussed.

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Brent Covele
General Atomics

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