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Scrape-off Layer Characteristics of QH and QDB Plasma Compared with ELMing H-mode and Advanced Tokamak Plasma[1] C.J. LASNIER, G.D. PORTER, M.E. FENSTERMACHER, M. GROTH, Lawrence Livermore National Laboratory, A.W. LEONARD, General Atomics, J.G. WATKINS, SNL — A constraint for design of future tokamaks is the transients in divertor heat load and other scrape-off layer (SOL) parameters during ELMs. Quiescent H-mode (QH) and quiescent double barrier (QDB) discharges offer steady-state confinement comparable to H-mode without ELMs. We examined the SOL characteristics of these discharges compared with ELMing H-mode and Advanced Tokamak discharges, including heat and particle flux profiles. The most obvious difference is increased steady-state peak heat flux in QH and QDB due to operation at lower density. We examined power balance for these discharges by measuring radiated power and first-wall heat flux compared with input power and stored energy. More power is missing than in ELMing H-mode. We find the ELM peak heat flux transient is eliminated in QH and QDB. The large steady-state heat flux stretches the limit of existing first wall technology and suggests a need for enhanced radiative dissipation.

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☐ Prefer Oral Session
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