

Abstract Submitted
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Limiter heat loads during the first operation of the W7-X stellarator GLEN WURDEN, Los Alamos National Laboratory, HOLGER NIEMANN, MARCIN JAKUBOWSKI, SERGEY BOZHENKOV, CHRISTOPH BIEDERMANN, STEFAN MARSEN, Max Planck Inst. for Plasma Physics, Greifswald, FLORIAN EFFENBERG, LAURIE STEPHEY, OLIVER SCHMITZ, U of Wisconsin, Madison, W7-X TEAM¹ — During the first operational phase (OP1.1) of the new W7-X stellarator, five poloidal graphite limiters served as the main boundary for the plasma. There was a dedicated set of diagnostics to observe the performance of the temporary poloidal limiters and infer basic transport behavior of the 3-D helical SOL plasma. We describe IR imaging of the limiters, which resulted in observations of 1) heat flux determination as a function of time and space, 2) total energy into the limiters, 3) high-frequency helical patterns of energy bursts onto the limiters, 4) changes in surface emissivity, and 5) detection of UFO's (small-to-large dusts). These measurements were made in 2 magnetic configuration discharges (differing iota), and in ones where the power loads to the limiters were systematically modified by the use of trim coils. Observed power fractions on the limiters ranged from 40% to 20% of the 0.6 to 4 MW ECRH input powers.

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