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Scaling Relationships for ELM Diverter Heat Flux on DIII D[1]

E.A. PETERS, Oregon S.U., M.A. MAKOWSKI, LLNL, A.W. LEONARD, GA — Edge Localized Modes (ELMs) are periodic plasma instabilities that occur during H-mode operation in tokamaks. Left unmitigated, these instabilities result in concentrated particle and heat fluxes at the divertor and stand to cause serious damage to the plasma facing components of tokamaks.[2] The purpose of this research is to find scaling relationships that predict divertor heat flux due to ELMs based on plasma parameters at the time of instability. This will be accomplished by correlating characteristic ELM parameters with corresponding plasma measurements and analyzing the data for trends. One early assessment is the effect of the heat transmission coefficient ? on the in/out asymmetry of the calculated ELM heat fluxes. Using IR camera data, further assessments in this study will continue to emphasize in/out asymmetry in ELMs, as this has important implications for ITER operation.

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[2]A.W. Leonard Phys. Plasmas 21, 090501 (2014)

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