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Test of the Eich model for ELM energy densities in DIII-D¹ MATTHIAS KNOLKER, LMU Munich, A. BORTOLON, G. CANAL, PPPL, T. ABRAMS, T. EVANS, A.W. LEONARD, GA, R. NAZIKIAN, PPPL, H. ZOHM, IPP — A collisionality scan on DIII-D reveals that peak parallel ELM energy densities during Type-I ELMs are within 0.5 - 2 times of a new model (T. Eich, NME 2017, in publication). In contrast to the model our analysis shows pedestal pressure dependence of ELM energy density. We find proximity to the L-H threshold as important scaling factor beyond the Eich model. ELMs with large energy densities were observed when barely above the LH-threshold. Linear stability analysis with ELITE shows that lower n peeling-ballooning modes with deeper eigenfunctions result in higher divertor heat loads. Measurements with fast soft X-ray and infrared thermography facilitate tracking the distribution of conducted and radiated ELM energy. As ITER will operate close to the LH-threshold our studies emphasize the importance of considering the full pre-ELM phase and not only static profiles for determining the heat load.

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