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Revisited ELM divertor heat load scaling to ITER with JET and ASDEX Upgrade data THOMAS EICH, BERNHARD SIEGLIN, ALBRECHT HERRMANN, Max-Planck-Institute for Plasma Physics, GUY MATTHEWS, MARC BEURSKENS, CCFE, ALBERTO LOARTE, Iter Organization, ASDEX UPGRADE TEAM, JET-EFDA COLLABORATION — The divertor heat load due to type-I ELMs is a major concern for ITER. Both the suppression of ELM losses and the scaling of ELM induced heat loads is hence a major research topic at the various operating tokamaks. The ELM energy density was calculated by assuming a relative ELM loss in ITER of few percent and a moderate broadening of the wetted area. The absolute numbers entering the scaling are the stored energy and the inter-ELM wetted area. Though it was shown both by DIII-D and JET that the ELM wetted area increases with the ELM loss energy, a scaling providing a quantitative estimate remained elusive. Recent attempts revisiting data from JET operation with carbon PFCs and with ITER-like-wall show an approximately linear dependence of ELM energy density with the pedestal top electron pressure. An attempt to scale the ELM energy density to ITER with pedestal pressure has the advantage that it directly utilizes measurements from Thomson-Scattering and infra-red thermography. However, it requires well diagnosed target heat load data for a wide scan in pedestal pressure. Currently this attempt is applied to data from ASDEX Upgrade to establish a multi-machine scaling.

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