## Abstract Submitted for the DPP16 Meeting of The American Physical Society

Numerical analysis of the heat flux characteristics in the helical scrape-off layer of the limiter start up configuration at Wendelstein 7- $X^{1}$ FLORIAN EFFENBERG, UW Madison, Y. FENG, IPP Greifswald, O. SCHMITZ, H. FRERICHS, T. BARBUI, UW Madison, J. GEIGER, M. JAKUBOWSKI, R. KOENIG, M. KRYCHOWIAK, H. NIEMANN, T.S. PEDERSEN, IPP Greifswald, L. STEPHEY, UW Madison, G. WURDEN, LANL, W7-X TEAM — A crucial topic for the stellarator W7-X is the power dissipation by impurities for future island divertor scenarios. The investigation of the related heat flux distribution and profiles including the radial power fall-off length  $\lambda_q$  in the 3D stellarator SOL is less straight forward as in toroidally symmetric tokamaks. Studies with the 3D plasma edge transport code EMC3-Eirene predicted a modulation of plasma parameters with  $L_C$  and correlated heterogenous heat and particle loads onto the limiters during start-up operation. The relative simple start up geometry at W7-X allows for a detailed analysis of the heat fluxes in separate helical transport channels featuring different  $\parallel$  to  $\perp$  transport ratios. It is shown that the SOL has two characteristic fall off domains - a near SOL and a far SOL domain which both have different power decay lengths. An increase of  $\lambda_q$  with  $L_C$  in the order of 1-1.5cm in the near SOL and 1.8-2.8cm in the far SOL for a power scan in the range of P = 0.5-2MW at  $n_{LCFS} = 2 \times 10^{18} \text{m}^{-3}$  has been found. First comparisons with IR camera data will be discussed.

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Florian Effenberg University of Wisconsin, Madison

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