Abstract Submitted
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Analysis of Geometric Modifications to Optimize High-Power Tokamak Divertors[1] M.V. UMANSKY, R.H. BULMER, R.H. COHEN, I. JOSEPH, T.D. ROGNLIEN, D.D. RYUTOV, LLNL — Next generation tokamak experiments and fusion reactors will have to accommodate divertor power flux an order of magnitude higher than in the present day experiments, as measured by the characteristic parameter P_{LCFS}/R_{maj}. Due to the engineering and materials constraints designing a divertor for such environment poses a challenging and presently unresolved task. In the present study the MHD code Corsica and edge transport code UEDGE are used for quantitative assessment of performance of high-power tokamak divertors. A multi-parametric study is conducted where a range of options is explored: varying x-point flux expansion using regular or snowflake-like divertor configuration [1], choice of divertor leg length and shape, shape of target plates, options for the radiating impurity, and assumptions for the anomalous transport. Varying the parameters we analyze the trends to optimize the peak power flux density on the target plate in a high-power divertor.
[1] D.D. Ryutov Physics of Plasmas 14, 064502

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