

Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Modeling of Edge Plasma in X-Point Target Divertor Configuration¹ M.V. UMANSKY, M.E. RENSINK, T.D. ROGNLIEN, LLNL, B. LABOMBARD, D. BRUNNER, J.L. TERRY, D.G. WHYTE, MIT PSFC — Innovative divertor configurations with secondary X-points in the divertor volume or close to the target plate have been actively studied in the tokamak edge plasma community in recent years. Such configurations include the cusp divertor [1], snowflake-like divertor [2], X-divertor [3], and X-point target divertor [4]. The presence of a secondary X-point in the divertor has hindered the application of most established tokamak edge plasma transport codes. To meet the demands for comprehensive modeling tools for such innovative configurations, the UEDGE code has been recently advanced to allow for inclusion of a secondary X-point in the divertor region. The present physics application is focused on the X-point target divertor configuration that has been speculated to allow for stable, highly radiating detached plasma regimes in the ADX tokamak concept [4]. The results of application of the upgraded UEDGE to an X-point target divertor configuration will be presented and physics implications will be discussed.

- [1] H. Takase, J. Phys. Soc. Japan, 70, 609, 2001;
- [2] D.D. Ryutov. Phys. Plasmas, 14, 064502, 2007;
- [3] M. Kotschenreuther et al., 2004 IAEA FEC, paper IC/P6-43;
- [4] B. LaBombard et al., Nucl. Fusion 55, 053020, 2015.

¹This work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

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Date submitted: 23 Jul 2015

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