

FY-2013 OFES Joint Research Target Report

JRT 2013 Planning Committee

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Milestone:

Conduct experiments and analysis on major fusion facilities, to evaluate stationary enhanced confinement regimes without large Edge Localized Modes (ELMs), and to improve understanding of the underlying physical mechanisms that allow acceptable edge particle transport while maintaining a strong thermal transport barrier. Mechanisms to be investigated can include intrinsic continuous edge plasma modes and externally applied 3D fields. Candidate regimes and techniques have been pioneered by each of the three major US facilities (C-Mod, D3D and NSTX). Coordinated experiments, measurements, and analysis will be carried out to assess and understand the operational space for the regimes. Exploiting the complementary parameters and tools of the devices, joint teams will aim to more closely approach key dimensionless parameters of ITER, and to identify correlations between edge fluctuations and transport. The role of rotation will be investigated. The research will strengthen the basis for extrapolation of stationary regimes which combine high energy confinement with good particle and impurity control, to ITER and other future fusion facilities for which avoidance of large ELMs is a critical issue.

4th Quarter Milestone:

Complete the required experiments and analysis. Prepare a joint report summarizing the contributions toward the development of high-performance stationary regimes devoid of large ELMs, and identifying important paths for future exploration.

This milestone has been completed by the submission of this report.

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This research was funded by the United States Department of Energy, under contracts DE-FC02-99ER54512-CMOD, DE-AC52-07NA27344, DE-AC02-09CH11466, DE-FG02-04ER54698, DE-AC05-00OR22725, DE-FG02-04ER54762, DE-FG02-05EAR54809, DE-FG02-99ER54527, DE-SC0001288, DE-AC05-00OR22725, DE-FG02-09ER55012 and DE-AC02-09CH11466.