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Category Number and Subject: 5.5.0 ITER and Magentic Fusion
Development

Theory Experiment Combined/General

USBPO Disruption Task: Critical Issues and Research Needs for the ITER DMS,* J.C. Wesley *General Atomics* – Research needed to support the 2016 Final Design Review for the ITER Disruption Mitigation System (DMS) are identified and presented in terms of four critical-issue-driven topics: 1) thermal energy (TE) mitigation and disposition to the first wall without melting, 2) control of the current quench rate following TE mitigation, 3) avoidance of runaway electron (RE) avalanching following TE mitigation, and 4) control and benign dissipation of REs from unmitigated disruptions and/or from REs generated if the high-density pre-emptive collisional mitigation method proposed for (3) proves infeasible. Issue-driven R&D logic, test and integration strategies and critical hardware, diagnostic and theory/modeling needs are identified and a USBPO framework for implementation proposed. Opportunities for contributions from U.S. and international facilities and the time-critical need for coordinated research activities and test of candidate mitigation methods and hardware with the most ‘ITER-like’ conditions available will be discussed.

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