Abstract Submitted
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DIII-D Support for ITER DMS Selection and Design[1] J.C. WESLEY, General Atomics — DIII-D provides unique capabilities for experiments and model validation activities needed for the ITER Disruption Mitigation System (DMS). Research focuses on three key physics issues: 1) benign thermal energy (TE) disposition followed by current quench (CQ) control, 2) runaway electron (RE) avalanche avoidance, and 3) control and benign dissipation of established RE beams. DIII-D possesses numerous injector technologies, allowing comparison of the suitability of massive gas injection (MGI) and shattered pellet injection (SPI) (primary ITER DMS options), as well as shell pellet injection, for accomplishing the above physics objectives. DIII-D results have already shown the separate feasibility of TE mitigation and CQ control. Measurements of RE dissipation indicate significant anomalous loss mechanisms, providing a possible path for RE suppression. The evolution of controlled RE plateaus indicates the beam/wall interaction is benign until a critical minor radius is reached. Integrated ITER TE/CQ and radiation-symmetry requirements are being studied with toroidally and poloidally separated MGI valves. RE avalanche avoidance by SPI will be investigated. RE dissipation studies will be extended to elongated plasmas to assess RE control and dissipation in ITER.

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John Wesley
General Atomics

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