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Overview of DIII-D Disruption Mitigation Experimental Results[1]

N.W. EIDIETIS, General Atomics — Recent DIII-D experiments on disruption mitigation have focused upon providing a physics basis for the design of the ITER disruption mitigation system. Progress in understanding several key issues for that system will be presented: toroidal AND poloidal radiation asymmetries during thermal quench mitigation, the anomalous dissipation of runaway electron current, and the effect of mitigation timing on wall thermal loads during vertical displacement events. This research utilized several new capabilities, including: dual massive gas injection valves to test the affect of toroidal and poloidal separation between injector locations upon radiation asymmetries, a new argon pellet injector for creating runaway electron beams, full-vessel IR imaging, and upgraded hard x-ray diagnostics for runaway electron diagnosis. Plans will also be presented for near-term hardware upgrades and experiments supporting the ITER disruption mitigation system design.

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