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Overview of two new tokamak disruption research projects on DIII-D and MST B.E. CHAPMAN, A.F. ALMAGRI, D.J. DEN HARTOG, K.J. MCCOLLAM, M.D. PANDYA, J.S. SARFF, C.R. SOVINEC, (UW-Madison), D.L. BROWER, J. CHEN, (UCLA), W.X. DING, (USTC) — Two new projects have been initiated on DIII-D and MST to further the understanding of disruptions in tokamak plasmas. Both projects focus on internal measurement of the magnetic fluctuations that play a key role in disrupting plasmas. The project on DIII-D encompasses the physics of the tearing mode trigger, thermal and current quenches, and post-quench runaway electrons. The project on MST, which has relatively recently begun operating as a tokamak, has a singular focus on the physics of the thermal quench. Internal measurement of magnetic fluctuations is made possible by advanced diagnostics including Faraday-effect polarimetry, cross-polarization scattering, and a rugged, multi-point insertible magnetic probe. Measurements with these diagnostics can reveal dynamics not detectable by sensing coils at the plasma boundary. A primary goal of these projects is comparison of the measurements to the results of 3D nonlinear MHD computation. That is with the goals of validating the modeling and improving predictive capability for ITER. Here we will present an overview of and initial results from these new projects. Work supported by U.S.D.O.E.

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