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Overview of two disruption research projects on DIII-D and MST
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— Two projects have recently 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 initial targets of the project on DIII-D have been the onset of tearing modes that can lead to disruption and the post-disruption runaway electron plateau. 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 on DIII-D is made possible by Faraday-effect polarimetry, and both polarimetry and a rugged, multi-point insertible magnetic probe are utilized on MST. 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 projects. Work supported by U.S.D.O.E.

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