

Disruption characterization and database activities for ITER

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Abstract. Disruption characterization and database development and analysis activities conducted for ITER under the aegis of the International Tokamak Physics Activity (ITPA) Topical Group on MHD, Disruption and Magnetic Control are described. Accomplishments during 2005-2006 include: formation of an International Disruption Database (IDDB) Working Group, implementation of an MDSplus-based IDDB infrastructure for collection and retrieval of disruption-relevant tokamak data, and collection of a “version 1” data set from eight elongated-plasma tokamaks. Analysis of the current quench data provides a new recommendation — equivalent to a 36-ms time for linear decay to zero current — about the lower bound on the plasma current decay time expected in ITER, and also emerging understanding about the possible distribution of current decay times expected during ITER operation. Data from low-aspect-ratio tokamaks also provide a direct empirical basis for prediction of current decay times in future devices with similar aspect ratios. Plans for further expansion of the scope, content and interpretation of the IDDB have been identified.

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