**Abstract Submitted for the Forty-Eighth Annual Meeting**
**Division of Plasma Physics**
**October 30th-November 3, 2006, Philadelphia, Pennsylvania**

Category Number and Subject: 5.6.2. DIII-D Tokamak

[ ] Theory [X] Experiment

**Analysis of Major Disruptions With Extremely Rapid Current Quenches in DIII-D and C-Mod,*** S. Angelini, R.S. Granetz, *MIT*, D.A. Humphreys, A.W. Hyatt, J.C. Wesley, *GA* –
Major disruptions are characterized by a prompt loss of stored energy before any loss of position, and followed by a rapid current quench (CQ). The CQ often produces an uncontrolled loss of vertical position, leading to plasma-wall contact. A rapid CQ at this time can induce large destructive eddy currents in surrounding structures. Without motion, the CQ time is proportional to the pre-disruption plasma area, among other dependencies. CQ times are often normalized by plasma area for cross-machine comparisons, but this ignores the role of vertical motion in accelerating the CQ rate. Some major disruptions in DIII-D have unusually rapid vertical motion and a normalized current decay time less than 1 $ms/m^2$, which would present a challenge to ITER's engineering design. C-Mod provides examples of plasmas similar to DIII-D's but with different CQ dynamics. We describe comparative analyses of C-Mod and DIII-D disruptions in order to determine whether extremely rapid CQ times are likely to occur in ITER.

*Work supported by the US DOE under DE-FC02-04ER54698, DE-FC02-99ER54512, and the Fusion Energy Sciences Fellowship.