

**Abstract Submitted for the 56th Annual Meeting
Division of Plasma Physics
October 27-31, 2014
New Orleans, Louisiana**

Category Number and Subject:

☐ Theory ☒ Experiment

Magnetic Control of Locked Modes in Present Devices and ITER,* F.A. Volpe, S. Sabbagh, R. Sweeney, *Columbia U.*; T. Hender, A. Kirk, *CCFE*; R.J. La Haye, E.J. Strait, *GA*; Y.H. Ding, B. Rao, *HUST*; S. Fietz, M. Maraschek, *IPP*; L. Frassinetti, *KTH*; Y. In, Y. Jeon, *NFRI*; S. Sakakibara, *NIFS* – The toroidal phase of non-rotating (“locked”) neoclassical tearing modes was controlled in several devices by means of applied magnetic perturbations. Evidence is presented from various tokamaks (ASDEX Upgrade, DIII-D, JET, J-TEXT, KSTAR), spherical tori (MAST, NSTX) and a reversed field pinch (EXTRAP-T2R). Furthermore, the phase of interchange modes was controlled in the LHD helical device. These results share a common interpretation in terms of torques acting on the mode. Based on this interpretation, it is predicted that control-coil currents will be sufficient to control the phase of locking in ITER. This will be possible both with the internal coils and with the external error-field-correction coils, and might have promising consequences for disruption avoidance (by aiding the electron cyclotron current drive stabilization of locked modes), as well as for spatially distributing heat loads during disruptions.

*This work was supported in part by the US Department of Energy under DE-SC0008520, DE-FC-02-04ER54698, & DE-AC02-09CH11466.