

Abstract Submitted
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Improved detection algorithms for low-frequency MHD activity in NSTX JOSHUA KALLMAN, JONATHAN MENARD, PPPL — Unstable MHD modes can pose a serious threat to equilibrium stability and lead to a loss of plasma confinement. The resistive wall mode (RWM) and locked mode are of particular concern on NSTX. To counteract these modes, an active feedback system has been installed on the device. In order to detect and correct these modes in real-time, the device relies on an array of 48 poloidal and radial magnetic field sensors, which are evenly divided between the upper and lower hemispheres. Due to the conditions of extreme heat during device bake-out as well as the harsh conditions inside the machine, some magnetic sensors are routinely inoperable during a given shot. Missing sensor data can often lead to a failure to detect a given mode, resulting in the inability to provide feedback to suppress it. The algorithm used to detect these modes was modified to provide an up/down average of the respective sensor sets in the hope that more accurate data could be obtained even in the case of several missing sensors. The results of this adapted algorithm will be discussed, as well as the general characteristics of the mode detection capabilities of the present sensor system.

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