

Abstract Submitted  
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**Control of MHD instabilities in the STOR-M tokamak**<sup>1</sup> CHIJIN XIAO, SAYF ELGRIW, AKIRA HIROSE, University of Saskatchewan, STOR-M TEAM — Experiments to control the MHD activities have been carried out through compact torus injection (CTI) and resonant helical coils (RHC) on the STOR-M tokamak. The MHD instabilities have been measured by Mirnov coil arrays and miniature soft X-ray (SXR) pin-hole cameras. The data have been analyzed by singular value decomposition algorithm and the spatial Fourier harmonic analysis. Injection of a high density compact torus into STOR-M induced a transient phase with reduced  $m = 2$  Mirnov oscillation amplitude. After appearance of an  $m = 1$  gong mode burst the  $m = 2$  oscillation amplitude returned to its nominal level before CTI. In the RHC experiments, an  $m = 2$  helical coil was wound outside the vacuum chamber and powered by a capacitor bank through an IGBT switch. A current pulse of a few milliseconds was applied to RHC during the plasma current plateau. Once the current amplitude reaches a threshold level, the  $m = 2$  MHD oscillation level was significantly reduced. Addition of equilibrium poloidal magnetic field calculated by TOSCA code, an assumed magnetic island perturbation, and the vacuum magnetic field produced by RHC also showed that the island can be eliminated when the RHC current reached a certain level.

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