Abstract Submitted for the DPP08 Meeting of The American Physical Society

Effect of Plasma Shaping Magnetic Field Coil on RMF Plasmas XIAOKANG YANG, YURI PETROV, TIAN-SEN HUANG, Prairie View A&M University — Experiments focusing on the response of plasma parameters to the change of external magnetic field have been conducted in 40 ms RMF plasma discharges, by using a magnetic coil in the mid-plane of the cylindrical chamber rotamak. The feeding current in the middle coil can be programmed to have different pulse duration, amplitude and triggering time. When the current in the middle coil is below a threshold level of 600A, plasma current responds with a growth to the increase of coil current. Depending on the initial conditions, plasma current can be enhanced by a maximum 3.1 kA; the peak plasma current is about 250% of the original plasma current. When middle coil is energized with current below disruptive level, in most area of plasma column n_e increases significantly with I_p , but there is only small change in T_e . In FRC regime, MHD instability can be completely suppressed by feeding middle coil with suitable current and triggering time.

Xiaokang Yang Prairie View A&M University

Date submitted: 16 Jul 2008 Electronic form version 1.4