

Abstract Submitted  
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**Initial results from a low-aspect ratio RFP machine “RELAX”<sup>1</sup>**

S. MASAMUNE, A. SANPEI, H. HIMURA, R. IKEZOE, T. ONCHI, K. MURATA, K. OHKI, H. SHIMAZU, T. YAMASHITA, Kyoto Institute of Technology — The low-aspectratio (A) RFP may have the potential to open a new regime of RFP configurations in that its equilibrium has such an advantage for confinement improvement as less densely spaced mode rational surfaces in the core region. It might also be desirable for steady state operation relying on the neoclassical bootstrap current. We have constructed a low-A RFP machine “RELAX” (**RE**versed field pinch of **L**ow-**A**spect ratio **eX**periment) with aspect ratio of 2 ( $R=0.51\text{m}/a=0.25\text{m}$ ) to explore the new RFP regime. The RFP discharge parameters in initial RELAX experiments are as follows. The plasma current  $I_p$  is in the range from 40-80kA with discharge duration of  $\lesssim 2\text{ms}$ . The discharge resistance  $R_p$  decreases with increasing  $I_p$ , from  $4\text{m}\Omega$  (at  $I_p=40\text{kA}$ ) to  $1\text{m}\Omega$  (at  $I_p=80\text{kA}$ ). The pinch parameter  $\Theta$  tends to be somewhat higher ( $\Theta = 1.8\text{-}3.0$ ) and the field reversal parameter  $F$ , deeper ( $F = -0.5 - -1.0$ ), when compared with those in medium- aspect ratio RFP. We will discuss on the MHD stability properties in RELAX by comparing the poloidal and toroidal mode spectra with experimental MHD equilibrium configurations.

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