

Abstract Submitted
for the DPP12 Meeting of
The American Physical Society

Progress in low-aspect-ratio RFP research in RELAX SADAO
MASAMUNE, A. SANPEI, S. NAKAKI, K. DEGUCHI, K. NISHIMURA,
H. TANAKA, H. HIMURA, Kyoto Inst. Tech., A. EJIRI, U. Tokyo, N.
MIZUGUCHI, K. KAWAHATA, NIFS, D.J. DEN HARTOG, U. Wisconsin-
Madison, R. PACCAGNELLA, Consorzio RFX — RELAX ($A=R/a=0.5\text{m}/0.25\text{m}$)
is a low-A RFP machine to study optimization of the RFP configuration, with ex-
ploration of the potential advantages of the low-A RFP. The discharge and plasma
parameters in RELAX to date are as follows: plasma current of up to 125kA, dis-
charge duration of up to 2-2.5ms, electron density in the range from 0.2 to 2.0
 $\times 10^{19}\text{m}^{-3}$, and central electron temperature of 100-150eV (at $I_p \sim 100\text{kA}$) from
Thomson scattering. Recent modification of the insulated gap flanges has improved
axisymmetry of the average toroidal field. The QSH duration has also been im-
proved as a result of the improved axisymmetry of the toroidal field. The vacuum
vessel has been covered with 64 saddle coils (4 polidally \times 16 toroidally) for the
RWM stabilization, and initial experiments have been started to stabilize a specific
mode by using limited number of the power supplies. The experimental results will
be compared with a non-linear 3-D MHD simulation result which has revealed that
the QSH state with experimentally observed $m/n=1/4$ structure can be realized for
 $A=2$ configuration. Some scenarios for high current ($I_p>100\text{kA}$) discharges with
sufficient controllability of the density will also be discussed.

Sadao Masamune
Kyoto Institute of Technology

Date submitted: 17 Jul 2012

Electronic form version 1.4