Abstract Submitted
for the DPP12 Meeting of
The American Physical Society

**Overview of recent experimental results from the Rotamak-ST discharges** XIAOKANG YANG, ERIC REDDIC, OLANIYE DADA, TIAN-SEN HUANG, Prairie View A&M University — By adding an axial rod current $I_z$, rotamak can operate as an ultra-low aspect ratio spherical tokamak (A $\approx$ 1.1), in which the plasma current is driven in a steady state, non-inductive fashion by rotating magnetic field. Recent experiments on Prairie View (PV) Rotamak-ST are focusing on high elongation $k$, high toroidal field utilization factor ($I_p/I_z$), and high ß$_t$ discharges. Recorded highest elongation $k \approx 4$ and high value of $I_p/I_z \approx 2.5$ have been achieved through actively controlling five magnetic shaping coils in typical rotamak-ST discharge, where there is no appearance of any MHD instability due to relatively high toroidal field. The combination of active plasma shape control and operation under low toroidal field allows PV rotamak to achieve both higher toroidal field utilization factor ($I_p/I_z \approx 4.0$) and higher ß$_t$ ($> 40\%$) discharges; but in this regime, low-$m$ / $n = 1$ kink mode has been observed.

Xiaokang Yang
Prairie View A&M University

Date submitted: 25 Jun 2012 Electronic form version 1.4