

Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Coherent Density Fluctuations in the HSX Stellarator C.B. DENG, D.L. BROWER, Univ of California, Los Angeles, D.T. ANDERSON, F.S.B. ANDERSON, K.M. LIKIN, J. SMONIEWSKI, J.N. TALMADGE, Univ of Wisconsin-Madison — A multi-channel interferometer system is used to measure equilibrium density profile and its fluctuations in the HSX stellarator. Low-frequency, coherent density fluctuations are observed in certain quasi-helically symmetric (QHS) plasma conditions and has characteristic frequency of 15kHz. The mode is observed for small displacement of the 1st harmonic O-mode ECRH location inward from the magnetic axis. This mode is also observed on magnetic fluctuation signal, using external coils, which shows $n=1$. When HSX is operated without quasi-helical symmetry (mirror configuration), a coherent electrostatic mode at 28 kHz is observed. While the coherent mode in QHS plasmas shows ballooning effect, the coherent mode in Mirror plasma exhibits an anti-ballooning characteristic. Mode radial structure can be obtained from inversion of interferometer measurement when the m number is known. Under certain Mirror conditions, the coherent modes display strong bi-coherence on Langmuir probe signals. Detailed characterization of the observed coherent modes will be reported and their identification will be explored. **Supported by USDOE grants DE-FG03-01ER54615 and DE-FG02-93ER54222.*

Chuanbao Deng
Univ of California, Los Angeles

Date submitted: 24 Jul 2015

Electronic form version 1.4