

Abstract Submitted  
for the DPP06 Meeting of  
The American Physical Society

**Gyrotron Frequency Measurements for Fast Ion CTS Diagnostics at TEXTOR and ASDEX Upgrade**<sup>1</sup> P. WOSKOV, MIT PSFC, H. BINDSLEV, F. LEIPOLD, F. MEO, S.K. NIELSEN, E.L. TSAKADZE, Risoe (Denmark), S.B. KORSHOLM, MIT and Risoe, J. SCHOLTEN, C. TITO, E. WESTERHOF, FOM IPP Rijnhuizen, J.W. OOSTERBEEK, Forschungszentrum IPP Juelich, F. LEUTERER, F. MONACO, M. MUENICH, D. WAGNER, Max Planck IPP Garching — The frequency spectrum of the 110 GHz gyrotron at TEXTOR and the 105 GHz mode of the two-frequency gyrotron at ASDEX-Upgrade (AUG) have been studied in support of fast ion collective Thomson scattering (CTS) diagnostics. High resolution (0.1 MHz) measurements over a 500 MHz bandwidth and a 50dB dynamic range were obtained by harmonic heterodyne frequency downshift followed by digital fast Fourier transform and fast scanning spectrum analyzer. The 180 kW, 0.2 s gyrotron at TEXTOR had a clean spectrum except for weak satellites (-40 dB) at 17.5 MHz and chirped down 27 MHz depending on duty factor. Under some conditions when viewing the plasma with both ICRH and NBI additional satellites at the ICRH 29 MHz frequency (-18 dB) and 58 GHz harmonic (-30 dB) were observed, apparently by feedback from the plasma along the gyrotron beam transmission line. The 500 kW, 5 s gyrotron at AUG had no satellites while not viewing the plasma and chirped down 104 MHz, mostly in the first 100 ms. Implications for CTS diagnostics will be discussed.

<sup>1</sup>Supported by U. S. DOE and EURATOM.

P. Woskov  
MIT PSFC

Date submitted: 17 Jul 2006

Electronic form version 1.4