

Abstract Submitted  
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**Time-Delay Estimation Analysis of BES Data to Extract Velocity and Potential Fluctuations in DIII-D**<sup>1</sup> M. JAKUBOWSKI, R.J. FONCK, G.R. MCKEE, University of Wisconsin, K.H. BURRELL, General Atomics — Beam Emission Spectroscopy (BES) measures localized density fluctuations in fusion plasma turbulence. A wavelet based time delay estimation analysis is applied to BES data to extract poloidal rotation velocity fluctuations from the density data. Under the assumption that poloidal flow velocity, and fluctuations therein, are dominated by  $E \times B$  flow, the velocity fluctuation power and correlation properties can in principle be used to measure electrostatic potential fluctuations and consequently turbulence-driven transport. This study quantifies the frequency transfer function characteristics for time-delay measurements using a time-varying cross-phase measurement. Reasonable sensitivity is found for frequencies below 1/20 of the sampling frequency, and this range is increased up to 1/6 of the sampling frequency (1/3 Nyquist) by data interpolation to simulate oversampling. Initial application to measurements on DIII-D are concentrating on the edge region in L-mode plasmas.

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Prefer Oral Session  
Prefer Poster Session

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Special instructions: Transport (Core), immediately following C Fenzi
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