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**Development of the Dynamic Programming Technique to Analyze BES Fluctuation Data,*** A.J. Creely, *Princeton U.*; G.R. McKee, Z. Yan, *U. Wisc.* – Detecting and accurately quantifying turbulence flows is important to understanding turbulent transport dynamics in magnetically confined plasmas. The Dynamic Programming (DP) mathematical technique has been adapted from fluid dynamics to measure rapidly time-varying turbulent flows that arise from radial electric fields and related turbulent processes. The DP technique enables more precise evaluation of the time- and space-resolved velocity of turbulent eddy structures from 2D BES measurements of local long-wavelength density fluctuations than previous Time-Delay-Estimation methods. The method adapts and optimizes a vector-to-vector matching transformation to reveal underlying high-frequency flows. This analysis technique will be tested and applied to the study of interactions between applied magnetic perturbations and Geodesic Acoustic Modes (GAMs), as well as poloidal flow and flow shear dynamics at the L-H transition and during limit cycle oscillations.

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