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Basis operator bispectral analysis on CSDX data D.A. BAVER, P.W. TERRY, University of Wisconsin-Madison, G.R. TYNAN, S.H. MUELLER, University of California-San Diego — Basis operator bispectral analysis is a novel approach for inferring parameters of a turbulent system from fluctuation measurements. This method differs from previous approaches to bispectral analysis in that it fits parameters to a model equation that is spatial, rather than spectral, in nature. This results in an algorithm that is much more flexible and adaptable. In particular, it is well-adapted to limited data sets and spatial inhomogeneities, such as shear flow, curvature effects, and boundary conditions. We will demonstrate this method by applying it to experimental data from CSDX. This will comprise both two-field analysis of probe data, and one-field analysis of camera data. By comparing these results with each other and with theoretical models, we can assess the accuracy and utility of this method of data analysis. We will also determine if this method can provide greater understanding of system behavior than simulation-to-experiment or theory-to-experiment comparisons alone. Work supported by USDOE.

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