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Next-Generation Methods for Bispectral Analysis D.A. BAVER, P.W. TERRY, University of Wisconsin-Madison — Bispectral analysis provides a method of determining linear growth rates and nonlinear transfer rates of turbulence from third-order correlations in fluctuation measurements. Traditionally, its usefulness has been limited by its requirement of large data sets in order to detect useful statistical correlations, and thus by the availability of experimental diagnostics capable of providing such large amounts of data. In terms of time series length, this requirement is greatly reduced by use of the basis function method. However, most diagnostics are limited in spatial resolution as well. To address this problem, we propose methods of reconstructing the fluctuation data where experimental data is insufficient. In order to avoid growth rate and transfer rate fits which reflect the reconstruction technique rather than actual physics, this reconstruction must be integrated into and concurrent with the fitting procedure. Using this approach we propose and test methods which are adapted to the limitations of experimental diagnostics and thus might provide a practical tool for data analysis. Work supported by USDOE.

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