

Abstract Submitted
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MHD Mode-Identification of Tokamak Plasmas¹ J.S. KIM, D.H. EDGELL, FARTECH, Inc., J.M. GREENE, General Atomics — Identification of coherent waves from tokamak plasmas is important for understanding and control of MHD behavior of the plasma. We present two complementary methods for MHD mode identification: the Singular Value Decomposition (SVD), and the spectral analysis (m, n) identification, where m and n are, respectively, the poloidal and toroidal mode numbers. In SVD the basis vectors representing the fluctuation data in the directions of maximum coherence, minimizing the number of significant basis vectors, are determined. Also, off-normal events can be recognized, while such events would be ignored with standard spectral analysis. However, spectral analysis (m, n) identification of tokamak data are desired for feedback control to obtain the resonance surface responsible for the unstable mode. The spatial-SVD vectors can be least-square-fit to specific numerical predictions for the spectral (m, n) identification. A phase-fitting method for spectral (m, n) mode identification is presented for comparison.

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Prefer Oral Session
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Special instructions: DIII-D Poster Session I, immediately following Turnbull

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