

Abstract Submitted
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The Impact of Correlations on MHD Equilibrium Reconstruction¹ A.M. JACOBS, Hendrix College, J.M. FINN, Los Alamos National Laboratory, L.L. LAO, E.J. STRAIT, General Atomics — Equilibrium reconstruction is vital to tokamak operation and post-discharge analysis. EFIT performs equilibrium reconstruction with a χ^2 minimization scheme that utilizes SVD and weighs terms by the variance of the data. It is shown how this regression can be further generalized by incorporating the covariance matrix of the data, which includes correlations between measurements. Sample covariance matrices are computed and used to calculate correlations in a variety of DIII-D magnetic data. The ultimate goal is a modified version of EFIT that takes advantage of the more generalized regression scheme to explore the possibility that highly correlated data could allow for a reduction in uncertainty [1]. The reconstructions of traditional SVD and the generalized covariance scheme are compared. Preliminary results indicate instances of high correlation in quiescent H-mode shots.

[1] C.S. Jones, et al., Nucl. Fusion **46**, 335 (2006).

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