

Abstract Submitted  
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**Clustering Analysis of Fast-ion Driven Instabilities<sup>1</sup>** J. GRESL, W.W. HEIDBRINK, UC Irvine, S. HASKEY, PPPL, B.D. BLACKWELL, ANU — Beam ions often drive Alfvén eigenmodes and other instabilities unstable in DIII-D. Many of these modes have been unambiguously identified but some frequently occurring features have been neglected. In this work, datamining analysis techniques [1] that successfully analyzed magnetics data from the H-1NF heliac are applied to arrays of magnetic and electron cyclotron emission (ECE) data from DIII-D. The techniques group instabilities with similar magnetic or ECE features into clusters. Once the clusters are found, a database of plasma parameters will facilitate mode identification.

[1] S.R. Haskey et al. , *Comp. Phys. Comm.* 185 (2014) 1169; B.D. Blackwell et al. *J. Pl. Phys. Fus. Res.* (2016) submitted.

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