Abstract Submitted for the DPP00 Meeting of The American Physical Society

Sorting Category:

Design Study of a Real-Time Resistive-Wall-Mode Identifier using Mirnov Signals for the DIII-D Tokamak¹ D.H. EDGELL, J.S. KIM, I.N. BOGATU, FARTECH, Inc., D.A. HUMPHREYS, A.D. TURNBULL, E.J. STRAIT, General Atomics, A.M. GAROFALO, Columbia University, M.S. CHANCE, PPPL -Real-time identification and control of the Resistive-Wall-Mode (RWM) are crucial for higher performance operation in present and future tokamaks. Identification of the RWM in a tokamak is difficult due to its slow rotation speed and the fact that its growth rate is comparable to the field penetration rate of the vacuum vessel wall. The mode can grow large enough to dramatically degrade confinement or cause disruption in less than one toroidal revolution of the mode. A matched filter method of identifying the n=1 RWM component in DIII-D using signals from toroidal and poloidal arrays of Mirnov probes has been developed. Estimations of the time required for data collection and analysis confirms the feasibility of using this method to produce a real-time mode identifier suitable for use in feedback stabilization of the mode on the DIII-D tokamak. The preliminary design of a real-time RWM identifier for integration with the DIII-D systems will be presented, including data acquisition and analysis hardware.

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Prefer Oral Session Prefer Poster Session D.H. Edgell edgell@far-tech.com FARTECH, Inc, San Diego, CA

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