Abstract Submitted
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$n > 1$ **Resistive Wall Mode (RWM) Identification,**[1] J. KIM, Y. IN, J.S. KIM, FAR-TECH, Inc., M. OKABAYASHI, PPPL, H. REIMERDES, A.M. GAROFALO, Columbia U., E.J. STRAIT, General Atomics, AND DIII-D THRUST 4 TEAM — Resistive wall mode studies in DIII-D demonstrated the effectiveness of $n = 1$ RWM feedback control beyond $n = 1$ no-wall $\beta$ limit, where $\beta$ is the ratio between plasma pressure and magnetic pressure. However it is predicted that, as $\beta$ increases, not only $n = 1$ RWM but also $n > 1$ RWM may become unstable. The presence of $n = 3$ mode on top of $n = 1$ mode has been observed in some recent DIII-D RWM shots. In order to accurately identify $n > 1$ RWM, a set of matched filters associated with $n > 1$ RWM is under development using the same method as developed for $n = 1$ matched filter [1]. Specifically, based on the magnetic perturbations of each toroidal mode on plasma surface, the FARVAC code calculates the estimated signals for magnetic sensors to construct $n > 1$ RWM matched filter. Along with the $n = 1$ RWM matched filter, we plan to use these $n > 1$ RWM matched filters to provide a more complete RWM identification to achieve higher $\beta$ operation.

[1] D.H. Edgell, et al., Rev. Sci. Instrum. **73, 1761 (2002).**

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