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Theory Experiment

Observation of $n>1$ Mode During ELM-Driven RWM Experiments in DIII-D,* J. Kim, Y. In, J.S. Kim, *FAR-TECH, Inc.*,

M. Okabayashi, *PPPL*, E.J. Strait, *GA*, A.M. Garofalo, H. Reimerdes, *Columbia U.* – In recent resistive wall mode (RWM) experiments in DIII-D, edge localized modes (ELMs) were found to trigger RWMs in high rotation plasmas, which are well above the rotation threshold [1]. Interestingly, the ELM-induced $n=1$ perturbations are almost always accompanied by significant amounts of $n=3$ modes. While an $n=1$ ELM-driven RWM grows but can be suppressed by active feedback, the influence of $n=3$ mode needs to be investigated. A clear example that an ELM-driven $n=3$ mode grew without being hindered by $n=1$ feedback will be presented. It is noteworthy that the $n=3$ mode appeared to cause β and rotation collapses, similar to $n=1$ RWM. Detailed MHD analysis is in progress to investigate whether the $n=3$ mode is attributable to $n=3$ RWM in the vicinity of $n=1$ wall-stabilized plasmas [2]. We will discuss the stability calculation results and the details of the $n=3$ mode observation.

[1] E.J. Strait, *et al.*, *Bull. Am. Phys. Soc.* **50**, 79 (2005).

[2] Y. In, *et al.*, to be submitted for publication.

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