Abstract Submitted
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Probing of the m/n=2/1 tearing mode by applied rotating magnetic field in DIII-D[1] R.J. LAHAYE, E.J. STRAIT, M. LANCTOT, C. PAZ-SOLDAN, GA, J. HANSON, Columbia U. — DIII-D experiments are studying the active probing of tearing stability. Of particular interest is the m/n=2/1 tearing mode in the low torque ITER baseline scenario. A rotating n=1 magnetic field was applied with frequency swept in steps across the anticipated 2/1 natural mode frequency to stimulate a plasma response measured with the Mirnov magnetic probe array. Differential rotation of the applied n=1 field from the natural rotation should result in induced helical currents at q=2 that inhibit the reconnection; the detected n=1 field should thus exhibit a 180 deg. change in phase in sweeping across the resonant frequency [1]. When matching the resonant frequency, the magnetic response should become singular as the tearing mode approaches marginality. In practice, peaks in the response are indeed observed but with less than 180 degree shifts (suggesting an n=1 kink response too) and not well resolved with the frequency steps used. Results and plans for a follow-up will be presented.

[1] R. Fitzpatrick, Physics of Plasmas 5, 3325 (1998)

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