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Effect of thick blanket modules on neoclassical tearing mode locking in ITER[1] R.J. LA HAYE, C. PAZ-SOLDAN, GA, Y. LIU, CCFE — m/n=2/1 tearing modes can be slowed and stop rotating (lock) by eddy currents induced in resistive walls, a particular issue in ITER with large inertia and low applied torque. Previous estimates of tolerable 2/1 island widths in ITER, based on a forecast of initial island rotation, the n=1 resistive penetration time of the *innervacuumvessel* wall and benchmarked to DIII-D high-torque plasmas, found that the ITER ECCD system could catch and subdue such islands before they persisted long and grew large enough to lock. However, rotating tearing modes in ITER will also induce eddy currents in the *blanket* as the effective first wall that can shield the inner vessel. The closer fitting blanket wall has a much shorter time constant and will allow several times smaller islands to lock several times faster in ITER. Recent DIII-D ITER baseline scenario plasmas with low-applied torque allow better modeling and scaling to ITER with the blanket as the first resistive wall. This motivates using the ITER ECCD system in a CW preemptive operation of as little as a well-aligned 3 MW to avoid destabilizing the 2/1 NTM.

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