

Abstract Submitted
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I-mode for ITER?¹ D.G. WHYTE, E. MARMAR, A. HUBBARD, J. HUGHES, A. DOMINGUEZ, M. GREENWALD, MIT PSFC — I-mode is a recently explored confinement regime that features a temperature pedestal and H-mode energy confinement, yet with L-mode particle confinement and no density pedestal nor large ELMs. Experiments on Alcator C-Mod and ASDEX-Upgrade show this leads to a stationary collisionless pedestal that inherently does not require ELMs for core impurity and particle control, possibly making I-mode an attractive operating regime for ITER where ELM heat pulses are expected to surpass material limits. We speculate as to how I-mode could be obtained, maintained and exploited for the ITER burning plasma physics mission. Issues examined include I-mode topology and power threshold requirements, pedestal formation, density control, avoiding H-mode, and the response of I-mode to alpha self-heating. Key uncertainties requiring further investigation are identified.

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Dennis Whyte
PSFC MIT

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