

Abstract Submitted
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A self-consistent model of an isothermal tokamak STEVEN MC-NAMARA, MATTHEW LILLEY, Imperial College London — Continued progress in liquid lithium coating technologies have made the development of a beam driven tokamak with minimal edge recycling a feasibly possibility. Such devices are characterised by improved confinement [1] due to their inherent stability and the suppression of thermal conduction. Particle and energy confinement become intrinsically linked and the plasma thermal energy content is governed by the injected beam. A self-consistent model of a purely beam fuelled isothermal tokamak is presented, including calculations of the density profile [2], bulk species temperature ratios and the fusion output. Stability considerations constrain the operating parameters and regions of stable operation are identified and their suitability to potential reactor applications discussed.

4pt] [1] R. Majeski et al., Phys. Rev. Lett. 97, 075002 (2006)

[2] P. J. Catto & R. D. Hazeltine, Phys. Plasmas 13, 122508 (2006)

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