

Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

Impure tokamak pedestals with strong radial electric field¹ SILVIA ESPINOSA, PETER J. CATTO, MIT Plasma Science and Fusion Center, Cambridge, MA, USA — A high confinement mode pedestal has density and potential variation on the poloidal ion gyroradius scale. As a result, the ExB-drift associated with radial electric field can compete with the poloidal projection of parallel ion streaming, making alternate neoclassical descriptions necessary. In addition, Alcator C-Mod experiments² make it clear that the impurity diamagnetic drift contribution must be allowed to be comparable to the impurity poloidal and toroidal flows to measure the radial electric field. Furthermore, Churchill et al.³ experimentally observe stronger poloidal variation of the impurity density than predicted by the most comprehensive theoretical models developed to date. A neoclassical ordering valid for slowly varying background ion temperature profiles in subsonic pedestals has been formulated that allows impurity diamagnetic flow effects to enter to lowest order. It results in strong poloidal impurity variation and possibly provides a more realistic model for pedestal observations, by extending the seminal work of Helander.⁴

¹Work supported by the U.S. Department of Energy Office of Science under Award Number DE-FG02-91ER-54109 and by "La Caixa" Fellowship.

²C. Theiler et al., **Nucl. Fusion** 54,083017

³R.M. Churchill et al., **Nucl. Fusion** 53,122002

⁴P. Helander, **Phys. Plasmas** 5,3999

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Date submitted: 10 Sep 2014

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