

Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Configurational Variations and Finite-Beta Effects on Neoclassical Viscosities and Flows in Stellarators¹ M. BREYFOGLE, T. MARINE, A.S. WARE, University of Montana, D.A. SPONG, Oak Ridge National Laboratory — The impact of magnetic geometry on neoclassical flows and viscosities for the Helically Symmetric Experiment (HSX) is investigated using the PENTA code [1,2]. Specifically, two topics are investigated: (1) finite-beta effects and (2) configurational variations. The PENTA code is used to calculate flows in HSX with the vacuum magnetic geometry and with finite-beta magnetic surfaces from the VMEC equilibrium code. This is done for the standard quasi-helically symmetric configuration of HSX, a symmetry-breaking mirror configuration and a hill configuration. The impact of these changes in the magnetic geometry on neoclassical viscosities and flows in HSX will be discussed.

[1] D. A. Spong, Phys. Plasmas 12, 056114 (2005).

[2] D. A. Spong, Fusion Sci. Technology 50, 343 (2006).

¹This work is supported by the U.S. DOE under grant No. DE-FG02-03ER54699 at the University of Montana.

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Date submitted: 18 Jul 2008

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