

Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

Equilibrium Reconstruction From Magnetic Sensors For The NCSX Stellarator¹ E.A. LAZARUS, Oak Ridge National Laboratory, N. POMPHREY, Princeton Plasma Physics Laboratory — In previous work [1] we have demonstrated that NCSX (National Compact Stellarator Experiment) will require active control of the helical and poloidal field coils in order to remain on a stable trajectory to high beta while retaining quasi-axisymmetry. We require a set of magnetic sensors that will be sensitive to changes in the equilibrium that represent departures from such a trajectory. That is, we will need to control features of the plasma boundary shape to a specification; that specification itself will vary with the current and pressure profiles. We need to determine a satisfactory set of magnetic sensors for this task. We will report on progress in our capability to reconstruct 3D equilibrium based on a proposed set of magnetic sensors for the NCSX stellarator using the STELLOPT code. The accuracy of such reconstructions is used to determine the adequacy of the sensor set for plasma control. [1] E.A. LAZARUS, et al., Fusion Science & Tech. 46 (2004) 213.

¹This work was supported by the U.S. Department of Energy under contract DE-AC05-00OR22725 with UT-Battelle, LLC.

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Date submitted: 24 Aug 2005

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