

Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

Equilibrium Reconstruction of LHD Discharges using V3FIT¹

AARON SONTAG, Oak Ridge National Laboratory, J. HANSON, Auburn University, J. HARRIS, Oak Ridge National Laboratory, S. OHDACHI, S. SAKAKIBARA, Y. SUZUKI, National Institute for Fusion Science — The presence of significant pressure driven currents as well as the ability to drive tens of kiloamperes of toroidal plasma current in LHD leads to deviations in the equilibrium magnetic geometry from the vacuum flux surfaces. The V3FIT code is being used to reconstruct non-axisymmetric stellarator equilibria for LHD discharges with the assumption of good flux surfaces. The present work is a study of the ability of the V3FIT code to reliably reconstruct the plasma equilibrium state for a variety of LHD discharge types using the existing diagnostics. The initial diagnostic set studied consists of the measured coil currents, the total plasma current, magnetic diagnostics and soft x-ray diode arrays. The accuracy of the reconstructed current and pressure profiles using this initial diagnostic set is assessed and the relative effectiveness of each diagnostic is determined for each fit parameter.

¹Supported by U.S. DOE Contract DE-AC05-00OR22725.

Aaron Sontag
Oak Ridge National Laboratory

Date submitted: 21 Jul 2011

Electronic form version 1.4