Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Initial development of 5D COGENT[1] R. H. COHEN, CompX, W. LEE, UCSD, M. DORF, M. DORR, LLNL — COGENT is a continuum gyrokinetic edge code being developed by the by the Edge Simulation Laboratory (ESL) collaboration. Work to date has been primarily focussed on a 4D (axisymmetric) version that models transport properties of edge plasmas[2]. We have begun development of an initial 5D version to study edge turbulence, with initial focus on kinetic effects on blob dynamics and drift-wave instability in a shearless magnetic field[3]. We are employing compiler directives and preprocessor macros to create a single source code that can be compiled in 4D or 5D, which helps to ensure consistency of physics representation between the two versions. A key aspect of COGENT is the employment of mapped multi-block grid capability to handle the complexity of diverter geometry. It is planned to eventually exploit this capability to handle magnetic shear, through a series of successively skewed unsheared grid blocks. The initial version has an unsheared grid and will be used to explore the degree to which a radial domain must be block decomposed. We report on the status of code development and initial tests.

[1]Work performed for USDOE, at LLNL under contract DE-AC52-07NA27344
[2]M. Dorf, invited talk, this meeting
[3]for application, see Wonjae Lee *et al.*, this meeting

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Date submitted: 24 Jul 2015 Electronic form version 1.4