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**Turbulent Confinement Models and Transport Solvers for PTRANSP**[1] H.E. ST. JOHN, L.L. LAO, G.M. STAEBLER, General Atomics, D. MCCUNE, Princeton Plasma Physics Laboratory — The PTRANSP development project is a multi-institutional, multi-year, effort designed to ensure that PTRANSP has the best physics models and computational support possible. Here we describe the first year's contribution that the collaborators at GA have made to this project. The primary result is a standalone module, GCNMP, that is coupled to PTRANSP and makes possible the analysis and simulation of tokamak discharges currently using the most promising confinement models, TGLF and GLF23. The TGLF model is particularly challenging in terms of computational effort required and several MPI based parallel schemes were implemented in order to minimize the time required to obtain solutions to the particle and energy balance equations. Using a client server approach the single cpu environment of PTRANSP remains intact. The reformulation of the transport equations strictly in terms of flows rather than the awkward, unnatural decomposition into diffusivities is presented. Application of TGLF to ITER, DIII-D, and benchmarks against XPTOR are discussed.

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H.E. St. John
General Atomics

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