Implementation of Linear Neoclassical Inner Region Model in the DCON Package A.H. GLASSER, Fusion Theory & Computation, Inc., Z.R. WANG, J.K. PARK, Princeton Plasma Physics Laboratory — We report on continuing development of the DCON package of codes for determining the stability of singular MHD modes in axisymmetric toroidal plasma, using the method of matched asymptotic expansions. We have previously reported on the development a singular Galerkin method for determining outer ideal MHD region matching data in DCON, coupled to the VACUUM code for free-boundary modes. The resistive MHD inner region of Glasser, Greene, and Johnson is implemented in the DELTAC code. Inner and outer solutions are combined with the MATCH code, which computes global eigenvalues and eigenfunctions. Verification against the MARS straight-through code indicates excellent agreement on eigenvalues and eigenfunctions, but with the DCON package running 100 times faster because of the asymptotic matching method. We now report improvement of the physics of the inner region by inclusion of the linear neoclassical effects of Connor, Hastie, and Helander[Plasma Phys. Control. Fusion 51, 0150091 (2009)], appropriate to the more realistic banana regime of low collisionality. Methods and results will be described.

Alan Glasser
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