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Two-dimensional quasilinear relaxation of fast ions V DUARTE, N GORELENKOV, M PODESTA, R WHITE, Princeton Plasma Physics Laboratory — Quasilinear models promise to be time-efficient and practical tools to assess the fast ion transport induced by the Alfven eigenmodes in tokamaks. We report on the progress in the development and verification of the Resonance Broadened Quasilinear (RBQ) code, which is capable of modeling the fast ion distribution function while self-consistently evolving the amplitudes of the modes. RBQ employs realistic eigenstructures, damping rates and wave-particle interaction matrices pre-computed by the NOVA-K code. Rigorous verification exercises are undertaken in limiting cases in which there exist analytical solutions for single-mode saturation levels. The effects of the resonant particle pitch angle scattering on the quasilinear dynamics of Alfven eigenmodes are addressed, in both single-mode and multi-mode cases. Progress on whole device modeling via the TRANSP code is also described. Finally, implementation of the extension of the implicit scheme to two dimensions are described.

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