Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

Collisional resonance function in discrete-resonance quasilinear plasma systems VINICIUS DUARTE, NIKOLAI GORELENKOV, ROSCOE WHITE, Princeton Plasma Physics Laboratory, HERB BERK, University of Texas, Austin — A method is developed to analytically determine the resonance broadening function in quasilinear theory, due to either Krook or Fokker-Planck scattering collisions of marginally unstable plasma systems where discrete resonance instabilities are excited without any mode overlap. It is demonstrated that a quasilinear system that employs the calculated broadening functions reported here systematically recovers the nonlinear growth rate and mode saturation levels for near-threshold plasmas previously calculated from nonlinear kinetic theory. The distribution function is also calculated, which enables precise determination of the characteristic collisional resonance width.

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Date submitted: 30 Jun 2019 Electronic form version 1.4