Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

Nonlinear bounce-gyrokinetic formulation of Neoclassical Tearing Modes[1] N. TRONKO, IPP Garching, A.J. BRIZARD, SMC — The nonlinear bounce-gyrokinetic formulation of neoclassical tearing modes in axisymmetric tokamak geometry is presented. The guiding-center/gyrocenter and bounce-center/bounce-gyrocenter phase-space transformations are successively introduced in order to self-consistently describe the nonlinear bounce-gyrocenter dynamics of trapped/passing-particle orbits in axisymmetric tokamak geometry in the presence of a magnetic-island perturbation. The bounce-gyrokinetic Poisson (i.e., quasineutrality condition) and parallel Ampere equations are written explicitly in terms of magnetic flux-surface-averaged expressions that clearly highlight the role of the reduced polarizations that result from dynamical reduction. This work generalizes previous reduced kinetic descriptions of neoclassical tearing modes [1,2].

[1] H.R. Wilson, J.W. Connor, R.J. Hastie, and C.C. Hegna, PoP **3**, 248 (1996).
[2] J.W. Connor, R.J. Hastie, and P. Helander, PPCF **51**, 015009 (2009).

[1]Work by AJB was supported by a grant from U.S. DoE.

Alain Brizard
St Michaels Coll

Date submitted: 11 Jul 2014 Electronic form version 1.4