1106-VL-1178 **Jeffrey Alan Willert*** (jaw@lanl.gov), Theoretical Division - MS B216, Los Alamos National Laboratory, Los Alamos, NM 87545. *Choosing a Nonlinear Solver for the Moment-Based Accelerated Thermal Radiative Transfer Algorithm.*

Recent algorithm design efforts for kinetic equations have included a class of highly-efficient methods referred to as Moment-Based Accelerators (MBAs), or High-Order/Low-Order (HO-LO) methods. For the Thermal Radiative Transfer problem, a MBA predictor-corrector algorithm has been designed in which a nonlinear reduced-phase-space problem must be solved twice per timestep. Traditionally, this nonlinear system has been solved using a Jacobian-Free Newton-Krylov (JFNK) approach, however this method is known to struggle for certain problem regimes. In this talk, we explore alternative modern nonlinear solvers including Anderson Acceleration. We conclude the talk with a comparison of JFNK and Anderson Acceleration and provide computational timing results. (Received September 11, 2014)