

Abstract Submitted  
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**Fully EM algorithms for the quasi-neutral, zero-electron-inertia model**<sup>1</sup> DENNIS HEWETT, LLNL — An algorithm has been developed to compute the electromagnetic signature of impulsive currents in quasi-neutral, collisionless plasmas. Such plasmas are common in laser target chambers, space physics, and EMP generating events. Traditional models[1] used in this regime make the Darwin assumption that neglects purely EM waves. Computing electro-magnetic pulse behavior (EMP) requires the solution of the EM wave equations. Other algorithms designed to treat this problem [2] are susceptible to round-off problems in our applications. The current algorithm, based on the same physics model, is to be much more forgiving in regions of low density or low magnetic field. Results and initial V&V analysis will be presented.

[1] “Low-frequency EM (Darwin) applications in plasma simulations”, Hewett, CPC, 84, pg 243, May 1994

[2] “A fully electromagnetic model for high density plasma simulations” Jones, Thomas, Mason, and Winske, 13<sup>th</sup> Conference on the Numerical Simulations of Plasmas, 1983.

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