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Boundary Integral Corrected Particle In Cell[1] CHRISTLIEB ANDREW, Michigan State University, CARTWRIGHT KEITH, AFRL/DEHE — Numerical heating is a serous problem in PIC modeling of cross field Diffusion. Recent work by the author has shown that for, electrostatic problems, the Boundary Integral Treecode (BIT) has far less numerical heating than traditional PIC and that numerical heating can be nearly eliminated if regularization is added to the BIT field solver. In this work we consider the application of BIT as a sub-cell method within each PIC cell, where the boundary conditions on BIT come from the fields computed on the PIC mesh. The goal is to minimize numerical heating in PIC while allowing for mesh spacing in PIC to be much greater than a Debye length. Our overall objective is to inherit the parallel capability of legacy PIC codes while providing high accuracy.

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