SCIDAC - CENTER FOR PLASMA EDGE SIMULATION - GENERAL ATOMICS SUPPORT OF NYU COLLABORATION

Final Report

by
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GENERAL ATOMICS

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Methods for implementing Coulomb collisions in particle codes were studied and developed. At first, a lattice-Boltzmann method seemed promising. After considering this in more detail, it was found not to be efficient enough. A method was then sought for implementing collisional effects as changes in particle weights, instead of changes in velocities. Although this may eventually be done, it was decided that a Langevin method would be more straightforward to develop, since it was possible to build on previous work. The rest of the contract period was spent developing the Langevin method, which ultimately resulted in a published paper, in April 2008 [F.L. Hinton, Phys. Plasma 15, 042501 (2008)].