Parallelizing a Two-Species Direct Simulation Monte Carlo Calculation DANIEL WILCOX, ROSS SPENCER, Brigham Young University — The computer simulation of a rarified gas usually requires a particle-based simulation technique. Direct Simulation Monte Carlo (DSMC) is such a technique, and is a common choice for rarified gas dynamics. Very large problems are infeasible on a single computer, due to time and memory constraints. A method will be presented to parallelize a two-dimensional DSMC simulation that has two species of particles. Special considerations for the boundary conditions will be presented. Analysis will be provided of speedup and of capability for large problems. Computed images of the supersonic flow of a gas mixture through a small nozzle will also be shown.

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Date submitted: 19 Sep 2008   Electronic form version 1.4