Monte Carlo Simulation Characteristics of Tracer Diffusion for Concentrated Lattice Gases TREVOR J. TORPIN, CHRISTOPHER D. WENTWORTH, Dept. of Physics, Doane College — Monte Carlo simulations of tracer diffusion for a concentrated lattice gas are presented for one, two, and three dimensional lattices. The model considered involves particles that can hop to nearest-neighbors only and that do not interact except that double occupancy of a lattice site is not allowed. We explore the time-dependence of the mean-square displacement of a tagged particle (the tracer) as characteristics of the model vary, including lattice dimensionality, lattice size, boundary conditions, and concentration of the lattice gas. The lattices considered include the one-dimensional chain, the square lattice, and the simple cubic lattice. For conditions that yield normal diffusion, the equilibrium value of the correlation factor is calculated as a function of concentration.

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