Isothermal Pressure Measurements of a Lattice Gas in Two and Three Dimensions Using a Random Walk Model ALEX SPIELMAN, PAUL QUINN, Kutztown University of Pennsylvania, SALLY WARNER, Oregon State University — We explore a computational random walk method of measuring the isothermal pressure of a lattice gas with and without the excluded volume interaction as introduced by [Hong and McGouldrick, Physica A. 225, 415(1998)]. The method is based on the discretization of the exact thermodynamic equations for the pressure. We expand the analysis to include the use of the Van Der Waals potential and the Yukawa potential. The analysis is also expanded to three dimensions and multiple walls. Simulation results were produced that are in excellent agreement with the theoretical predictions.

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