

Abstract for GR-TR Conference on Statistical Mechanics and Dynamical Systems

Topic: Other

Preference: Poster

Monte Carlo Simulation of confined hard ellipse-fluid

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The structural and thermodynamic properties of a confined hard-ellipse fluid are studied using Monte Carlo simulation. The angular, average number densities and order parameters of hard ellipses confined between hard parallel walls are obtained for various bulk densities, aspect ratios and wall separations. The results show that the effect of the existence of the wall on the molecular fluid structure, either on their directions or their locations, with respect to the bulk, specially close to the walls, is significant. For this system the pressure is also obtained and it is shown that the average density at the wall is proportional to the pressure, $\beta P = \langle \rho_w \rangle$. Our simulation results show the order parameters depend on the number of the particles in the box unless it exceeds a thousand.