Abstract Submitted
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Transport coefficients from the Boson Uehling-Uhlenbeck Equation ERICH GUST, LINDA REICHL, Univ of Texas, Austin — We derive microscopic expressions for the bulk viscosity, shear viscosity and thermal conductivity of a quantum degenerate Bose gas above T_C, the critical temperature for Bose-Einstein condensation. The gas interacts via a contact potential and is described by the Uehling-Uhlenbeck equation. To derive the transport coefficients, we use Rayleigh-Schrodinger perturbation theory rather than the Chapman-Enskog approach. This approach illuminates the link between transport coefficients and eigenvalues of the collision operator. We find that a method of summing the second order contributions using the fact that the relaxation rates have a known limit improves the accuracy of the computations. We numerically compute the shear viscosity and thermal conductivity for any boson gas that interacts via a contact potential. We find that the bulk viscosity remains identically zero as it is for the classical case.

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