[tex80] **Relative momentum of two ideal gas particles**

Consider a classical ideal gas of N atoms with mass m confined to a box of volume V in thermal equilibrium with a heat reservoir at temperature T.

(a) Find the distribution $F_{lm}(P) \equiv \langle \delta(P - |\mathbf{p}_l - \mathbf{p}_m|) \rangle$ of the magnitude of the relative momenta of two ideal gas particles.

(b) Find the ratio of the average magnitudes $\langle P \rangle / \langle p \rangle$ of the relative momentum of two particles and the momentum of a single particle.