# Physics 214A
# Problem Set 5
# Fall 1997

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**Problem 16.**

(20 points) Molecule C is a bound system of atoms A and B. The binding energy is $\epsilon$. The masses are $m_A$, $m_B$ and $m_C = m_A + m_B$ respectively. At temperature T find the density of C as a function of the densities of A and B. Use the grand canonical ensemble.

**Problem 17.**

Two surfaces are placed into a container filled with a gas of molecules of mass $m$ at a temperature T and pressure P. The first surface has $N_1$ adsorbing sites that bind the gas molecules with a binding energy $\epsilon_1$, while the second has $N_2$ sites that bind with energy $\epsilon_2$. What is the ratio of the number of adsorbed molecules on the two surfaces? What is the limit of this ratio for low pressures?