Advanced Statistical Physics
Problem Set 13

due: 09.02.2011
available at http://userpage.fu-berlin.de/psilvest/

Problem 13.1 Show that a two-dimensional Bose does not exhibit a Bose-Einstein condensation. Assume a standard quadratic dispersion, $E = p^2/2m$. **[2p]**

Problem 13.2 Postponed problem from the previous set. Consider the (3-dimensional) Bose gas in the potential $U = m\omega^2\vec{r}^2/2$. Find the temperature of the Bose-Einstein condensation and the discontinuity of the heat capacity at this temperature. Number of particles is N. You may need functions f_m^+ and ξ_m defined in Kardar's book. **[2p]**

Problem 13.3 Use this opportunity to discuss with tutors problems from the entire course. **[0p]**