Area Seminar

Title	Condensation temperature of bosons for the quartic confining potential and ground state geometry of binary condensates.
Date and Time	13/04/2010 16:00:00
Speaker	Prof. S. Gautam Reader Physical Research Laboratory, Ahmedabad
Area	Theoretical Physics
Venue	Room No. 469
Abstract	We calculate the critical temperature T_c of non-interacting bosons, including the effect of finite boson number, at which normal to BEC transition occurs for the quartic confining potential. For two species BECs (TBECs), we show that the ground state interface geometry in the phase separated regime undergoes a smooth transition from planar to ellipsoidal to cylindrical geometry. This occurs for condensates with repulsive interactions as the trapping potential is changed from prolate to oblate. The correct ground state geometry emerges when the interface energy is included in the energy minimization, whereas energy minimization based on Thomas-Fermi approximation gives incorrect geometry. We also examine WKB approximation to calculate p-wave scattering length which describes the low energy scattering properties of identical fermions.