Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Phase transitions in rotating Bose-Einstein condensates[1] MAHIR HUSSEIN, Max Planck Institut fur Physik Komplexer Systeme, Dresden, Germany , PIET VAN ISACKER, Grand Accelerateur National d'Ions Lourds, KLAUS BARTSCHAT, Drake University, OLEG VOROV, UNC at Charlotte — The transition to the Abrikosov state has been observed in cold atomic gases. Such critical behavior is very sensitive [1] to the interaction between the particles in the condensate [2,3]. We give an analytic description [1] of the phase-transition point and classify the types of the corresponding instabilities that depend on the interaction. This toy model of a continuous phase transition predicts the same behavior patterns for all systems governed by a similar energy functional. [1] O. K. Vorov, P. Van Isacker, M. S. Hussein and K. Bartschat, Phys. Rev. Lett. 95, 230406 (2005). [2] O. K. Vorov, M. S. Hussein and P. Van Isacker, Phys. Rev. Lett. 90, 200402 (2003). [3] O. K. Vorov, P. Van Isacker, M. S. Hussein and K. Bartschat, to be submitted to Nature (2007).

[1]supported by NSF (USA), CEA (France)

Oleg Vorov
UNC at Charlotte

Date submitted: 27 Nov 2007 Electronic form version 1.4