

Abstract Submitted  
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**Nucleation and growth of vortices in a rotating BEC<sup>1</sup>** OLEG VOROV, Drake University, PIET VAN ISACKER, GANIL, MAHIR HUSSEIN, Universidade de Sao Paulo, KLAUS BARTSCHAT, Drake University — An analytic solution of the Gross-Pitaevskii equation [1] for a rotating Bose-Einstein condensate of trapped atoms describes the onset of vorticity when the rotational speed is increased, starting with the entry of the first vortex [2] and followed by the formation of growing symmetric Wigner molecules. It explains the staircase of angular momentum jumps and the behavior of the bosonic occupancies observed in numerical studies. The universalities of this behavior [3] and its similarity to the mesoscopic superconductors are discussed. [1] O.K. Vorov, P. Van Isacker, M.S. Hussein, and K. Bartschat, Phys. Rev. Lett. 95, 230406 (2005). [2] O.K. Vorov, P. Van Isacker, and M.S. Hussein, Phys. Rev. Lett., 90, 200402 (2003). [3] O.K. Vorov, P. Van Isacker, and M.S. Hussein, and K. Bartschat, *subm. To Nature (London)*.

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