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Two-level trap model of BEC in an ideal gas KONSTANTIN DORFMAN, VITALY KOCHAROVSKY, Department of Physics, Texas A&M University, College Station, TX 77843, USA, VLADIMIR KOCHAROVSKY, Institute of Applied Physics, Russian Academy of Science, Nizhny Novgorod, Russia — We consider a two-energy-level trap with arbitrary degeneracy of an upper level and find an analytical solution for the condensate statistics in a mesoscopic ideal gas with arbitrary number of atoms and any temperature, including a critical region. The solution is a cut-off negative binomial distribution that tends to a cut-off gamma distribution in the thermodynamic limit. We show how to model BEC in real traps by BEC in the two-level or three-level traps.

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