

Abstract Submitted  
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**Measurement of critical exponents at spontaneous symmetry breaking in a parametrically excited magneto-optical trap** MYOUNG-SUN HEO, KI-HWAN LEE, CHANGIL RYOO, DAHYUN YUM, YONGHEE KIM, Seoul National University, KIHWAN KIM, University of Innsbruck, WONHO JHE, Seoul National University — While critical phenomena in equilibrium systems has been well known both in theory and in experiments, those studies in non-equilibrium or far-from-equilibrium systems are still challenging subjects. These have been studied in a number of systems. Laser cooled confined atoms also can be a good candidate since we are able to easily change its temperature and numbers. By parametrically modulating magneto-optical trap we have observed several interesting phenomena such as dynamic double well, Hopf bifurcation and spontaneous symmetry-breaking(SSB). Particularly SSB is approximately identified as Ising-like phase transition. We measured critical exponents relevant to this phase transition, varying the control parameter, the size of the system or total number. We also have observed SSB occurs, changing temperature by injecting resonant laser light.

Myoung-Sun Heo  
Seoul National University

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