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Study of Spontaneous Symmetry Breaking in Parametrically Driven Magneto-Optical Trap YONGHEE KIM, MYOUNG-SUN HEO, WONHO JHE, School of Physics and Astronomy, Seoul National University, HEUNG-RYOUL NOH, Department of Physics, Chonnam National University, MARK DYKMAN, Department of Physics and Astronomy, Michigan State University — Recently, there were a lot of results related to many interesting nonlinear phenomena in parametrically driven Magneto-optical trap(MOT) system. Among them spontaneous symmetry breaking(SSB) is most interesting phenomenon. The SSB has been observed experimentally but it is not fully understood in microscopic view. We study the SSB theoretically by changing of variable in rotating frame and modeling the interaction between the atoms. We simulate the system with changing the interaction strength and diffusion constant, then compare with the experimental results.

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