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**Measurement of the shadow effect in a parametrically modulated cold atomic system** JI-HYOUN KIM, GEOL MOON, YONGHEE KIM, WONHO JHE, Department of Physics and Astronomy, Seoul National University — We measure the shadow effect of the cold atomic system in a parametrically modulated trap. The system shows ideal mean-field type symmetry breaking transition via changing the total number of atoms. This phase transition is originated from the competition between fluctuations and the long-range interaction mediated by the photons, the shadow effect. We apply the static bias field in the direction compensating the shadow effect, then measure the strength of the shadow effect directly from the coercive field which is the strength of the bias field to restore the symmetry. We compare this result with the other one which is extracted from the position change of the atomic cloud during the phase transition and the theory. We also expect that this negative bias-field method is useful to investigate the order-reversal transition in a system response to pulse bias field.

Yonghee Kim  
Department of Physics and Astronomy, Seoul National University

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