

Abstract Submitted
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Anomalous switching of optical bistability in a Bose-Einstein condensate SHUAI YANG, Institute for Quantum Science and Engineering (IQSE) and Department of Physics and Astronomy, Texas A&M University, College Station, Texas 77843, USA, M. AL-AMRI, The National Center for Mathematics and Physics, KACST, P.O. Box 6086, Riyadh 11442, Saudi Arabia, M. SUHAIL ZUBAIRY, Institute for Quantum Science and Engineering and Department of Physics and Astronomy, Texas A&M University, College Station, Texas 77843, USA — The nonlinear dynamics of the photon number in an optical cavity filled with a cigar-shaped Bose-Einstein condensate is investigated. We find that the way of adding the field is crucial to the switching close to the critical transition point. If the pump field is changed abruptly, the system may jump from one branch to the other even if the pump field intensity has not reached the critical transition point yet. This behavior is similar to the anomalous switching in the dispersive optical bistability.

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