

# Two-mode entangled bosonic system and Leggett-Garg inequality.

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We consider a system involving two quantum nonlinear oscillators mutually coupled and continuously driven by an external coherent field. For such a model, we discuss temporal correlations. In particular, we examine the Leggett-Garg inequality's (LGI) violation. We analyze various scenarios of measurements based on projection onto different Bell states, showing that the possibility of violating LGI inequalities is related to the use of different projectors.