

Abstract Submitted
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Quantum synchronization of two dissipatively coupled Van der Pol oscillators STEFAN WALTER, University of Basel, University of Erlangen-Nürnberg, ANDREAS NUNNENKAMP, University of Basel, University of Cambridge, CHRISTOPH BRUDER, University of Basel — Synchronization is a universal phenomenon that is important both in fundamental studies and in technical applications. Here we study synchronization of two dissipatively coupled Van der Pol oscillators in the quantum regime and analyze synchronization in terms of frequency entrainment and frequency locking ¹. Due to quantum noise strict frequency locking is absent and is replaced by a crossover from weak to strong frequency entrainment. The differences to the behavior of one quantum Van der Pol oscillator subject to an external drive ² are discussed. Moreover, a possible experimental realization of two coupled quantum Van der Pol oscillators in an optomechanical setting is described.

¹S. Walter, A. Nunnenkamp, and C. Bruder,
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²S. Walter, A. Nunnenkamp, and C. Bruder,
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