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Entanglement of two distant nitrogen-vacancy-center ensembles under the action of squeezed microwave field

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Abstract content
   (Max 300 words)
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We consider a known circuit consisting of two distant nitrogen-vacancy-center ensembles coupled to separate transmission line resonators, which interact by means of a current biased Josephson junction. Our investigation is focused on transitions and dissipation in the Josephson junction leading to entanglement. In our approach the Josephson junction is regarded as a reservoir, whose variables are eliminated from the system dynamics. We include in this scheme also superconducting quantum interference devices, flux-driven Josephson parametric amplifiers, which are the sources of a squeezed microwave field. The entanglement was studied in terms of the logarithmic negativity. The logarithmic negativity was considered for different regimes: weak coupling and strong coupling of transitions of the Josephson junction, and under action of squeezed microwave fields. We show that different degrees, time and duration of entanglement can be reached for various parameters choices.

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PhD

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