

Entanglement dynamics of two nitrogen vacancy centers coupled by a nanomechanical resonator

**Z. Toklikishvili¹, L. Chotorlishvili², S. K. Mishra³, S. Stagraczynski²,
M. Schüler², A.R.P. Rau⁴ and J. Berakdar²**

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**Department of Physics, Tbilisi State University, Chavchavadze av. 3, 0128,
Tbilisi, Georgia**

2

**Institut für Physik, Martin-Luther-Universität Halle-Wittenberg, D-06120
Halle, Germany**

3

**Department of Physics, Indian Institute of Technology, Banaras Hindu
University, Varanasi-221005,
India**

4

**Department of Physics and Astronomy, Louisiana State University, Baton
Rouge, Louisiana 70803-4001,**

United States of America

Abstract:

we study the time evolution of the entanglement between two remote NV Centers (nitrogen vacancy in diamond) connected by a dual-mode nanomechanical resonator with magnetic tips on both sides. Calculating the negativity as a measure for the entanglement, we find that the entanglement between two spins oscillates with time and can be manipulated by varying the parameters of the system. We observed the phenomenon of a sudden death and the periodic revivals of entanglement in time. For the study of quantum decoherence, we implement a Lindblad master equation. In spite of its complexity, the model is analytically solvable under fairly reasonable assumptions, and shows that the decoherence influences the entanglement, the sudden death, and the revivals in time

References:

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