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Title:	Superradiance enhanced magnetic field detection with nv centers in diamond
Authors:	<a href="#">Kumar, Shashwat.</a>
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Abstract:	We propose the use of entangled Dicke states in a system of large number of spins for enhanced magnetic field sensing. The current magnetic field sensors make use of the non-entangled spins of the diamond NV centers. Which, in principle, keeps the sensing efficiency to be limited by the standard quantum limit (SQL). We harness superradiance from an ensemble of diamond NV centers for generating highly entangled symmetric Dicke states. The use of the symmetric Dicke states for sensing applications could help us get closer to the Heisenberg limit for sensing. Since recently observed superradiance uses a cavity to couple the emission of NV mode to the cavity mode, we open the cavity to detune it from the current emission mode. We give a method to freeze the entangled Dicke states during the superradiant emission from diamond NV centers by detuning the cavity from the emission mode of the Diamond NV centers. Once we have prepared the Dicke states, we can use these states for sensing purpose bounded by Heisenberg limit.
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