

Probing decoherence and entanglement with molecular systems

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Abstract

The talk will discuss two topics in molecular quantum optics, a field that seeks to apply concepts and methods from quantum optics and quantum information theory to molecular systems. Specifically, I will describe how decoherence due to the interaction with an achiral background gas can explain the super-selection and stabilization of chiral molecular configurations states [1]. In the second part, a proposal to demonstrate non-local correlations in the motion of far separated particles will be presented. It is based on the well-controlled Feshbach dissociation of Li_2 molecules [2], and it would allow one to test quantum mechanical delocalization on unprecedented scales.

Keywords: Hund's paradox, chiral super-selection, dissociation time entanglement, Bell test for atomic motion

References

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