

Abstract Submitted
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Quantifying and Tuning Entanglement for Spin Systems QING XU, SABRE KAIS, Purdue University, AHMED SAMEH, Purdue University — The research carries out a benchmark exact calculation in the field of entanglement in a 19-site two-dimensional spin system. Of particular interest, we study one or more impurities embedded into such systems. We demonstrate that entanglement can be controlled and tuned by varying the ratio of the strength of the magnetic field to the exchange interaction h/J and by introducing impurities. We also discuss the relation of the amount of entanglement, between the impurity spins and the environment, and the decoherence time, which is a quantity measurable in experiments and of relevance in various proposals for traditional and quantum computer hardware.

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