

Abstract Submitted
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Static and Dynamic Properties of Flying Spin Qubits¹ VANITA SRINIVASA, JEREMY LEVY, University of Pittsburgh, COSMQC TEAM — Domain walls in dimerized spin-1/2 chains may be used to transport spin qubits rapidly and with high fidelity (PRB **76**, 094411 (2007)). Three-spin rings constitute the simplest system in which these “flying spin qubits” may be realized. We explore some general properties of three-spin rings with modulated Heisenberg exchange coupling by calculating the corresponding static and dynamic spin states. We also discuss how the motion of domain walls in individual and coupled pairs of rings may be used to carry out single and two-qubit unitary operations within these systems.

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