

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**High Fidelity State Transfer Over an Unmodulated Linear  $XY$  Spin Chain** C. ALLEN BISHOP, Department of Physics, Southern Illinois University Carbondale, YONG-CHENG OU, Department of Physics, Texas Tech University, ZHAO-MING WANG, Department of Physics, Ocean University of China, MARK BYRD, Department of Physics, Southern Illinois University Carbondale — We provide a class of initial encodings that can be sent with a high fidelity over an unmodulated, linear,  $XY$  spin chain. As an example, an average fidelity of 96% can be obtained using an 11-spin encoding to transmit a state over a chain containing 10,000 spins. An analysis of the magnetic-field dependence is given, and conditions for field optimization are provided.

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Date submitted: 26 Nov 2010

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