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High Fidelity State Transfer Over an Unmodulated Linear XY Spin Chain C. ALLEN BISHOP, YONG-CHENG OU, MARK BYRD, Physics Department, Southern Illinois University Carbondale, ZHAO-MING WANG, Physics Department, Ocean University of China, Qingdao — 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 ninety-six percent can be obtained using an eleven-spin encoding to transmit a state over a chain containing ten-thousand spins. An analysis of the magnetic field dependence is given, and conditions for field optimization are provided.

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