Quantum Monte Carlo study of a spin-Peierls model in a magnetic field[1] JEONGPIL SONG, R.T. CLAY, Mississippi State University — We present results of a quantum Monte Carlo study of a quasi one-dimensional XY spin model coupled to quantum phonons. We compare different updating techniques for the Stochastic Series Expansion method and present autocorrelation time data. We are able to reduce autocorrelation times by using loop update techniques for both spin and phonon degrees of freedom. We determine the critical phonon coupling for the spin-Peierls state, and discuss the dependence on the phonon frequency, magnetic field, and inter-chain coupling.

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