

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Global quantum correlations in the spin-1 bilinear-biquadratic chain ROMAN ORUS, University of Queensland and Max Planck Institute of Quantum Optics, TZU-CHIEH WEI, University of British Columbia — We investigate global properties of the ground state of the spin-1 bilinear-biquadratic quantum spin chain in the thermodynamic limit, focusing on the geometric entanglement and fidelity diagram. The two quantities are computed via iTEBD and they appear to be capable of detecting the various well-known phase transitions in the system, including a Kosterlitz-Thouless one. The two quantities also behave distinctively at other points in the phase diagram. In particular, this is the case for the fidelity diagram at $\theta \approx 1.34\pi$ (around a possible transition to a spin nematic phase), and also for the geometric entanglement at the integrable gapped point $\theta = 3\pi/2$, where we conjecture an infinite entanglement length in the system.

Tzu-Chieh Wei
University of British Columbia

Date submitted: 18 Nov 2010

Electronic form version 1.4