

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Breakdown of the coherent state path integral: two simple examples¹ JUSTIN WILSON, VICTOR GALITSKI, Dept. of Physics, University of Maryland — We show how the time-continuous coherent state path integral breaks down for both the single-site Bose-Hubbard model and the spin path integral. Specifically, when the Hamiltonian is quadratic in a generator of the algebra used to construct coherent states, the path integral fails to produce correct results following from an operator approach. As suggested by previous authors, we note that the problems do not arise in the time-discretized version of the path integral. Further, a naïve use of the semiclassics agrees with our conclusions.

¹NSF-CAREER award, DMR-0847224

Justin Wilson
University of Maryland

Date submitted: 19 Nov 2010

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