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Quantum spins and their approach to the classical limit LARRY ENGELHARDT, Francis Marion University — We have performed Monte Carlo calculations for both quantum and classical Heisenberg spin models in an effort to study how quantum spins approach the "classical limit". This talk will include a brief review of these models and their physical consequences, as well as a summary of our most interesting results. In particular, by considering many values of the intrinsic spin quantum number s, we have studied how the discrete energy spectra of (quantum) spin rings approach continuous spectra in the limit $s \to \infty$.[1] Additionally, by calculating the temperature dependence of the magnetic susceptibility for many geometries, we have also determined the temperature range over which classical spin models will accurately approximate quantum systems.[2]

[1]L. Engelhardt and M. Luban, Phys. Rev. B **73**, 054430 (2006).
[2]L. Engelhardt, M. Luban, and C. Schröder, Phys. Rev. B **74**, 054413 (2006).

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