

On magnetic models in wavefunction ensembles

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We recasted thermodynamics in terms of spin-wavefunction ensembles, rather than classical particle configurations or “found” values of Copenhagen Quantum Mechanics. This asks a completely new mathematical treatment. In these ensembles, magnetic phase transitions are possible if and only if we consider indistinguishable particles together with a macroscopic non-linearity which blocks macroscopic dispersion (i.e. macroscopic superpositions) by energy conservation (preserving norm and energy). This mechanism is negligible at atomic scale but becomes very large for large N , and hence is of possible interest for the Classical-Quantum boundary.

References:

[1] arXiv:2208.07688