

Abstract Submitted
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Exploring Diabolical points and Berry Phases in the Majorana Representation ABHISHEK ROY, University of Illinois, Urbana-Champaign — Diabolical points or level crossings are often observed in spin hamiltonians, where they give rise to a Berry phase. We study their geometric structure using the Majorana representation which associates a spin state to a set of points on the Bloch sphere. Each crossing carries a Chern number which is found to be directly related to the wrapping of Majorana points around it. We apply our method to study model hamiltonians for molecular magnets in an external magnetic field, in which a rich pattern of diabolical points are seen. Our result enables a simple visualization of the Berry phases without the use of perturbation theory.

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