

Berry Phase and Quantum Skyrmions: A Loop Tour in Physics

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Abstract : In several physics systems the whole can be obtained as an exact copy of each of its parts, which facilitates the study of a complex system by looking carefully at its elements, separately. Reductionism offers simplified models which makes the problems easier, but “there’s plenty of room...at the mesoscopic scale”. Here we present a tour for two of its representants: Berry phase and skyrmions, studying some of its basic definitions and properties, and two cases in which both arise together, to finish constraining the scale for our mesoscopic system in the quest of quantum skyrmions, discovering which properties are conserved and which others may be destroyed.

Keywords : condensed matter, quantum physics, skyrmions, topological defects

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