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Quantum Physics

Homotopy and Path Integrals

Fumika Suzuki

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This is an introductory review of the connection between homotopy theory and path integrals, mainly focus on works done by Schulman [23] that he compared path integral on SO(3) and its universal covering space SU(2), DeWitt and Laidlaw [15] that they proved the theorem to the case of path integrals on the multiply-connected topological spaces. Also, we discuss the application of the theorem in Aharonov-Bohm effect given by [20,24]. An informal introduction to homotopy theory is provided for readers who are not familiar with the theory.

Subjects: **Quantum Physics (quant-ph)**; Mathematical Physics (math-ph)
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