Path integral representation of a two qubit system[1] JUSTIN WIL-
SON, VICTOR GALITSKI, University of Maryland — In the path integral repre-
sentation of a one qubit system, extra degrees of freedom are needed to pass from
the Hamiltonian formulation to the path integral (Lagrangian) formulation. This
leads to a topological term in the Lagrangian much like a Wess-Zumino term. Such
a term is topological and is related to the Hopf fibration of S^3 by S^1 over S^2 (and
indeed this term appears even when the Hamiltonian is zero). There is an analo-
gous Hopf fibration for the two qubit state from S^7 by S^3 over S^4. We explore how
this is related to the topological term in the path integral formulation for two qubit
systems.

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