

Abstract Submitted
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Topology of Quantum Discord¹ NGA NGUYEN, ROBERT JOYNT,
Department of Physics, University of Wisconsin-Madison, Madison, Wisconsin
53706, USA — Quantum discord is arguably a more sensitive measure of quantum
correlations than quantum entanglement, and may be able to serve as a resource for
quantum computation. All quantum correlations are subject to destruction by external
noise. The route by which this destruction takes place depends on the shape of
the hypersurface of zero discord in the space of generalized Bloch vectors. In the case
of 2 qubits, we show that, except at the origin, this hypersurface is a 9-dimensional
manifold with boundary embedded in a 15-dimensional background space. This is
done by computing the tangent vectors explicitly and verifying that there are no
self-intersections. We discuss the implications for the time evolution of discord in
physical models, which contrasts sharply with the evolution of entanglement.

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Nga Nguyen
Department of Physics, University of Wisconsin-Madison,
Madison, Wisconsin 53706, USA

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