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Geometry of two-qubit evolution and entanglement protection via local operations CHARLES TAHAN, RUSKO RUSKOV, Laboratory for Physical Sciences, College Park, MD — The two-qubit pure state evolution under unitary (Hamiltonian) and measurement transformations is conveniently described via a Hopf fibration map, where an S4 sphere is the two-qubit analog of the single-qubit Bloch sphere and entanglement is encoded in an S4 subspace. We show that there exist two-qubit entanglement protection protocols based only on local operations that are as efficient as in the case of a single qubit state protection. We consider several examples related to current or near future experiments in superconducting circuits. We discuss the relevance of such ideas for quantum computing.

Charles Tahan
Laboratory for Physical Sciences, College Park, MD

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