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Generalization of the one-qubit Bloch Sphere for the two-qubit SU(4) dynamic group[1] DMITRY USKOV, RAVI RAU, Louisiana State University — The common definition of the Bloch Sphere is based on the isomorphism of su(2) and so(3) Lie algebras. We generalize the Bloch construction to the case of the SU(4) group using the Lie group isomorphism SU(4)≅Spin(6). Since Spin(n+1)/Spin(n)=S^n, the associated chain of subgroups Spin(3) ⊂ Spin(4) ⊂ Spin(5) ⊂ Spin(6), embedded in the SU(4) group, allows a natural identification of a set of spheres invariant under the adjoint SU(4) action. An alternative route, using the Lie group isomorphism so(4) ≅su(2)×su(2) and a canonical Cartan decomposition, is also discussed.

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