

FACES FOR TWO-QUBIT SEPARABLE STATES AND THE CONVEX
HULLS OF TRIGONOMETRIC MOMENT CURVES

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Abstract: We analyze the facial structures of the convex set consisting of all two-qubit separable states. One of the faces is a four-dimensional convex body generated by the trigonometric moment curve arising from polyhedral combinatorics. Another one is an eight-dimensional convex body, which is the convex hull of a homeomorphic image of the two-dimensional sphere. Extreme points consist of points on the surface, and any two of them determine an edge. We also reconstruct the trigonometric moment curve in any even-dimensional affine space using the qubit-qudit systems, and characterize the facial structures of the convex hull.

2000 AMS Mathematics Subject Classification: Primary: 81P16, 52B11, 15A30, 46L30. **Keywords and phrases:** Separable state, entanglement, trigonometric moment curve, face, extreme point.

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