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Title: Equiangular tight frames from Seidel matrices containing cube roots of unity

Abstract: We derive easily verifiable conditions which characterize when complex Seidel matrices containing cube roots of unity have exactly two eigenvalues. The existence of such matrices is equivalent to the existence of equiangular tight frames for which the inner product between any two frame vectors is always a common multiple of the cube roots of unity. We also exhibit a relationship between these equiangular tight frames, complex Seidel matrices, and highly regular directed graphs. We will end by showing how to construct examples of such frames with arbitrarily many vectors. This is joint work with Bernhard Bodmann and Vern Paulsen.