

1136-42-226

**Matthew Fickus\*** ([matthew.fickus@afit.edu](mailto:matthew.fickus@afit.edu)). *Equiangular tight frames and combinatorial designs.*

An equiangular tight frame (ETF) is a type of optimal packing of lines in a real or complex Euclidean space. ETFs arise in several applications, involving waveform design for communications, compressed sensing, quantum information theory and algebraic coding theory. In the complex case, many fundamental problems concerning the existence of ETFs remain glaringly open. All known positive existence results are by explicit construction. In particular, beyond orthonormal bases and regular simplices, all known infinite families of ETFs arise from combinatorial designs. We give an overview of these constructions, and then use them to formulate some plausible conjectures regarding ETF existence. (Received January 16, 2018)