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(`peterson.jesse.d@gmail.com`). *Tremain equiangular tight frames and strongly regular graphs.*

An equiangular tight frame (ETF) is a set of unit vectors whose coherence achieves the Welch bound, and thus is as incoherent as possible. Such frames arise in various applications such as waveform design, quantum information theory, compressed sensing and algebraic coding theory. Unfortunately, ETFs seem to be quite rare, and only a few methods for constructing them are known. In this talk we present a construction of a new class of ETFs, which we call Tremain ETFs. These new ETFs can be constructed to be real infinitely often. We use these real Tremain ETFs to obtain new results on some well-studied problems in graph theory. (Received February 23, 2016)