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Incoherent Matrices for Compressed Sensing. Preliminary report.

The maximum of the absolute values of the inner products of the columns of a matrix is known as the coherence of that matrix. In applications, namely in compressed sensing, the matrix in question is not a square matrix, it is a fat matrix. The set of columns of the matrix is said to be equi-angular if the absolute values of these inner products is a constant for any pair of columns. These are highly desirable matrices but difficult to construct in higher dimensions. The lowest coherence is given by the well known Welch bound. Under mild conditions, these columns form a frame. The optimal (with lowest coherence) ones are known as the Grassmanian frames. In this talk, we look at these columns as a frame and talk about reducing the coherence of the frame. (Received September 16, 2016)