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Junbo Huang* (j26huang@uwaterloo.ca). *Sets of Complex Unit Vectors and Distance-Regular Graphs*. Preliminary report.

A set of unit vectors in \mathbb{C}^m with the property that the standard inner product of distinct vectors in the set has absolute value 0 or α (with $\alpha \neq 0$) is called a $\{0, \alpha\}$ -set. A vector in \mathbb{C}^m is called *flat* if all of its entries have the same absolute value. In 2005, Godsil and Roy found a construction of $\{0, \alpha\}$ -sets of flat vectors using certain bipartite graphs. In this talk, I will sketch the construction by Godsil and Roy. I will then present bounds on the sizes of $\{0, \alpha\}$ -sets of flat vectors in \mathbb{R}^m and \mathbb{C}^m , and I will talk about the distance-regular graphs that can be used to produce $\{0, \alpha\}$ -sets that meet these bounds at equality. (Received March 01, 2013)