

Mutually Unbiased Bases

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24-06-2009

Two orthogonal bases A and B of an n -dimensional Hilbert space are called *Mutually Unbiased* if for $a_i \in A$ and $b_j \in B$ holds: $|(a_i, b_j)|^2 = \frac{1}{n}$ for each $i, j \in \{1, \dots, n\}$. A set \mathcal{B} of Mutually Unbiased Bases (MUBs) is a set of bases such that each two distinct bases $B_i, B_j \in \mathcal{B}$ are mutually unbiased.

The bounds on the number of MUBs, dependent on the dimension n , will be derived. Also a construction for MUBs in \mathbb{C}^p , with p prime, will be showed. Finally, some open problems will be discussed.