The Grothendieck inequality

(Prof. Gadadhar Misra)

Abstract:
If $|\sum_{i,j=1}^{n} a_{ij}s_it_j| \leq 1$ for all vectors s, t with $|s_i|, |t_i| \leq 1$, then $|\sum_{i,j}^{n} a_{ij}\langle x_i, y_j\rangle| \leq K(n)$ for any choice of unit vectors $x_1, ..., , x_n; y_1, ..., y_n$ of a Hilbert space H.

The limit of $K(n)$ remains finite as $n \to \infty$ and is the universal constant K of Grothendieck. We will discuss this inequality along with many of its surprising consequences.