A Bollobás-type problem: from root systems to Erdős–Ko–Rado

Qëndrim Gashi
Department of Mathematics, University of Prishtina

Motivated by an Erdős–Ko–Rado type problem on sets of strongly orthogonal roots in the type A root system, we estimate bounds for the size of a family of pairs (A_i, B_i) of k-subsets in $\{1, 2, \ldots, n\}$ such that $A_i \cap B_j = \emptyset$ and $|A_i \cap A_j| + |B_i \cap B_j| = k$ for all $i \neq j$. This is reminiscent of a classic problem of Bollobás.