

The Helly and Radon Numbers in Multipartite Tournaments

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Abstract

One of the goals in convexity theory is to study the relationship between various convex invariants. For two-path convexity in a multipartite tournament T , we study the relationship between the Helly number $h(T)$, the Radon number $r(T)$, and the rank $d(T)$. In the case that T is clone-free, we found that $h(T) = r(T) = d(T)$ whenever $d(T) \geq 4$ and that $h(T) = r(T)$ except perhaps when $h(T) = 2$ and $r(T) = 3$. The results are not as pretty in general multipartite tournaments, but we still get some nice results.