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Combinatorics of complex line arrangements with essential jumping loci

Let A be a finite set of lines in a complex projective plane. The jumping loci of A is the variety V of rank 1 local systems L on the complement M of A such that $H^1(M, L) \neq 0$. It follows from a previous work of A.Libgober and the author that each component of V containing the locally constant system corresponds to a set X of multiple intersection points and $d = \dim H^1(M, L)$ on this component is bounded above by the minimal multiplicity of points from X minus 2. A component of V is esential if it is not induced from a proper subset of A. In this talk we consider arrangements having essential components with multiplicities of all points from X equal to $d + 2$. These conditions put strong restrictions on combinatorics of X given by the incidence matrix - this matrix could be broken in the union of pairwise orthogonal latin squares. The number of these latin squares equals to $d + 2$ and can be only 3, 4, or 5. Moreover certain restrictions appear on the combinatorics of all points of the arrangement. We classify some cases and give infinite series of new realizable and nonrealizable combinatorial patterns. Some of the results were obtained jointly with A.Libgober.