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Relative Arrangements

Abstract: We study pairs (A, A') of arrangements in $\mathbb{R}^n$.

Here A and A' are finite sets of linear subspaces auch that $A' \subseteq A$. We are motivated by ordered analogs of configuration spaces over the complex numbers. In the talk we exhibit this connection and discuss how to analyze the relative links $(S^n \cap \bigcup_{H \in A} H, S^n \cap \bigcup_{H \in A'} H)$ and complements $\bigcup_{H \in A} H$, $S^n \cap \bigcup_{H \in A'} H$ via diagram of spaces methods. We derive Ziegler-Zivaljevic type formulas in general and Goresky-Macpherson type formulas in special cases. The latter show that relative arrangements do not exhibit representation stability.