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Star configuration on generic hypersurfaces

Let F be a homogeneous polynomial in $S = \mathbb{C}[x_0, \ldots, x_n]$. Our goal is to understand a particular polynomial decomposition of F; geometrically, we wish to determine when the hypersurface defined by F in $\mathbb{P}^n$ contains a star configuration. To solve this problem, we use techniques from commutative algebra and algebraic geometry to reduce our question to computing the rank of a matrix. This is a joint work with E. Carlini and A. Van Tuyl.