

TITLE: INVARIANT THEORY OF MILNOR ALGEBRAS

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Given a non-degenerate homogeneous form f on \mathbb{C}^n of degree d , the Milnor algebra of f is defined as the quotient of the polynomial ring $\mathbb{C}[x_1, \dots, x_n]$ by the ideal $J(f)$ of first order partials of f . For each integer k , one can define the k th Hilbert point of the Milnor algebra as the subspace of degree k polynomials contained in $J(f)$. When $k = n(d - 2)$, this Hilbert point is classically called a Macaulay inverse system. We study the invariant theory of these Hilbert points viewed as points in the corresponding Grassmanians. We will then be able to resolve a conjecture of Eastwood and Isaev which is related to the well-known Mather-Yau theorem for isolated hypersurface singularities.

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