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Lefschetz properties of Jacobian algebras and Jacobian modules

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Abstract. Let $V : f = 0$ be a hypersurface of degree $d \geq 3$ in the complex projective space $\mathbb{P}^n$, with $n \geq 3$, having only isolated singularities. Let $M(f)$ be the associated Jacobian algebra and $H : \ell = 0$ be a hyperplane in $\mathbb{P}^n$ avoiding the singularities of V, but such that $V \cap H$ is singular. We relate the Lefschetz-type properties of the linear maps $\ell : M(f)_k \to M(f)_{k+1}$ induced by the multiplication by the linear form ℓ to the singularities of the hyperplane section $V \cap H$. Similar results are obtained for the Jacobian module $N(f)$.

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