

Images of locally nilpotent derivations acting on ideals of polynomial algebras

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Abstract. Let k be a field of characteristic zero, and $k^{[n]} := k[x_1, x_2, \dots, x_n]$ the polynomial algebra in n variables over k . The LND Conjecture asserts that the image of a locally nilpotent derivation of $k^{[n]}$ acting on an ideal of $k^{[n]}$ is a Mathieu–Zhao subspace. This conjecture is still open for any $n \geq 2$, which arose from the Jacobian Conjecture. In this paper, we show that the LND Conjecture holds in dimension $n = 2$ for principal ideals and some other classes of ideals.

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