

**Title:** Images of locally nilpotent derivations acting on ideals of polynomial algebras

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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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