

Images of locally nilpotent derivations acting on ideals of polynomial algebras

By DAYAN LIU (Changchun), XIAOSONG SUN (Changchun)
and XIAOLEI ZENG (Changchun)

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.

DAYAN LIU &
XIAOSONG SUN &
XIAOLEI ZENG
SCHOOL OF MATHEMATICS
JILIN UNIVERSITY
CHANGCHUN 130012
CHINA

Mathematics Subject Classification: 14R10, 13N15.

Key words and phrases: locally nilpotent derivations, Jacobian Conjecture, Mathieu–Zhao subspaces.