LOCALLY QUASI–NILPOTENT ELEMENTARY OPERATORS

NADIA BOUDI AND MARTIN MATHIEU

Abstract. Let $A$ be a unital dense algebra of linear mappings on a complex vector space $X$. Let $\phi = \sum_{i=1}^{n} M_{a_i, b_i}$ be a locally quasi-nilpotent elementary operator of length $n$ on $A$. We show that, if $\{a_1, \ldots, a_n\}$ is locally linearly independent, then the local dimension of $V(\phi) = \text{span}\{b_i a_j : 1 \leq i, j \leq n\}$ is at most $n(n-1)/2$. If $\text{ldim} V(\phi) = n(n-1)/2$, then there exists a representation of $\phi$ as $\phi = \sum_{i=1}^{n} M_{a_i, v_i}$ with $v_i M_j = 0$ for $i \geq j$. Moreover, we give a complete characterization of locally quasi-nilpotent elementary operators of length 3.


Keywords and phrases: Elementary operator, quasi-nilpotent, locally linearly independent.

REFERENCES
