

# Pairs of Commuting Nilpotent Matrices

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## Abstract

Fix a nilpotent  $n \times n$  matrix  $B$  over an algebraically closed field  $k$  and of Jordan partition  $P$ . Consider the centralizer  $\mathcal{C}_B$  of  $B$  consisting of all  $n \times n$  matrices that commute with  $B$  and its irreducible subvariety  $\mathcal{N}_B$  of nilpotent matrices. There is a Jordan block partition  $Q(P)$  of the generic matrix  $A \in \mathcal{N}_B$ , that is greater than any other Jordan partition occurring for elements of  $\mathcal{N}_B$ . In this talk we review the basic facts about  $Q(P)$  and also discuss a new approach developed in a joint work with R. Basili and A. Iarrobino.