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**"On the maximum nilpotent orbit which intersects the centralizer of  
a matrix"**

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**Abstract**

We point out properties of the maximum nilpotent orbit which intersects a varieties described by a strictly upper triangular matrix over a polynomial ring; we show that it only depends on the ranks of its submatrices and we introduce conditions on a subvariety so that it intersects that maximum orbit. We apply these results to a maximal nilpotent subalgebra of the centralizer of a given nilpotent  $n \times n$  matrix with partition  $B$ ; then we prove that the maximum partition of a nilpotent matrix which commutes with  $B$  can be found by a simple algorithm which was conjectured by Polona Oblak.