Jordan type stratification of spaces of commuting nilpotent matrices

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The Jordan type of a nilpotent matrix in the dense orbit of the nilpotent commutator of a given nilpotent matrix of Jordan type P is *stable*, which means that the parts differ by at least two. Fixing a matrix J of stable Jordan type Q, there is an affine space of nilpotent matrices commuting with J.

In recent joint work with A. Iarrobino and L. Khatami, we use some tropical calculations to determine equations defining the loci of each partition P for which Q is the generic commuting partition. We also propose a conjecture generalizing this result to arbitrary stable Q. A key ingredient is the recent proof of the Box Conjecture by J. Irving, T. Košir and M. Mastnak.