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On the Luna stratification of quotients

If X is an affine variety on which a reductive group G acts, the invariant theoretic quotient $X//G$ admits a finite stratification by stabilizer subgroups. A natural question is, whether this stratification is connected to the geometry of $X//G$, e.g. whether it is preserved by any automorphism of $X//G$. We study this question for interesting families of representations of G , giving an affirmative answer for example in the case of more than three copies of the adjoint representation.

This is joint work with Zinovy Reichstein.