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Alex P. Babinski* (alex.babinski@tufts.edu). *Levi decomposition of nilpotent centralizers in classical groups over fields of bad characteristic*. Preliminary report.

In studying the representation theory of Lie algebras, it becomes important to understand the structure of orbits and centralizers of nilpotent elements. Using \mathfrak{sl}_2 -triples in characteristic zero, and an analogue in arbitrary good characteristic, it can be shown that such a centralizer has a Levi decomposition. Unfortunately, in bad characteristic, this analogue could fail to exist.

In this talk, we will discuss some constructions of M. Liebeck and G. Seitz which provide a “hands-on” approach to building a subgroup of the centralizer isomorphic to the reductive quotient when $G = Sp(V)$ or $O(V)$. In bad characteristic, though, this is not enough to ensure a Levi decomposition; the projection map must be an isomorphism infinitesimally as well. In many cases, we verify that this potential Levi subgroup gives a direct sum decomposition in the Lie algebra, and hence an honest Levi decomposition of the centralizer. (Received July 21, 2014)