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Nilpotent Lie Algebras with Property $L'' \neq 0$ and $\dim(L'/L'') = 3$. Preliminary report.

In a recent paper by Csaba Schneider, the structure of finite p -groups G , such that $G''' \neq 1$ and $|G'/G''| = p^3$ were found. In the two generator case, Schneider used Lie algebra calculations to inspire the ideas behind the group structure and then extended the group structure to include the cases of more than two generators. Here we complete the analogous Lie Algebra problem, for nilpotent Lie algebras L such that $L'' \neq 0$ and $\dim(L'/L'') = 3$, we find that L can be generated by at most 5 elements. We then go on to find the structures of these Lie algebras and classify all of them over the complex numbers. (Received August 28, 2006)