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On the Pro-Lie Group Theorem and the Closed Subgroup Theorem

Let H and M be closed normal subgroups of a pro-Lie group G and assume that H is connected and that G/M is a Lie group. Then there is a closed normal subgroup N of G such that $N \subseteq M$, that G/N is a Lie group, and that HN is closed in G . As a consequence, $H/(H \cap N) \rightarrow HN/N$ is an isomorphism of Lie groups.

Keywords: Pro-Lie groups, closed subgroup theorem.

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