

Sirawich Saranakomkoop 062101840

SML Group Theory

Ex Proof that the center of Lie algebra is Invariant.

From Definition:

The Lie subalgebra L' is invariant if $[X, Y] \in L'$ is true whenever either X or Y is an element of L' .

Let L' be the center of a Lie algebra

From the definition of the center of a Lie Algebra L'

$$\forall X, Y \in L', [X, Y] = 0$$

As 0 belongs to the center of any Lie Algebra

Thus, $[X, Y] \in L'$, or in other words the center of any Lie algebra is invariant.