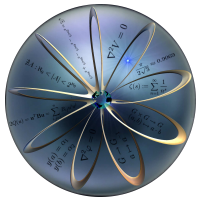

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Cartan subalgebra

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Defines	rank of a Lie algebra

Let $\mathfrak{g}$ be a Lie algebra. Then a *Cartan subalgebra* is a maximal subalgebra of $\mathfrak{g}$ which is *self-normalizing*, that is, if $[g, h] \in \mathfrak{h}$ for all $h \in \mathfrak{h}$, then $g \in \mathfrak{h}$ as well. Any Cartan subalgebra $\mathfrak{h}$ is nilpotent, and if $\mathfrak{g}$ is semi-simple, it is abelian. All Cartan subalgebras of a Lie algebra are conjugate by the adjoint action of any Lie group with algebra $\mathfrak{g}$.

The dimension of $\mathfrak{h}$ is called the *rank* of $\mathfrak{g}$.