Inner ideals of real Lie algebras

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If L is a Lie algebra, a subspace B of L is called an *inner ideal* if $[B,[B,L]] \subset B$. This notion is inspired in Jordan algebras and it dues to [1], which used it to reconstruct the geometry defined by Tits from the corresponding Chevalley group. Soon, [2] began a sistematic study of inner ideals of Lie algebras with a view in an Artinian theory for Lie algebras (no restrictions on the dimension or on the characteristic of the field). A good compilation from the algebraic approach can be found in the recent monograph [3].

In this poster, we clasify abelian inner ideals of the finite-dimensional simple real Lie algebras. Note that the classification of the abelian inner ideals of the finite-dimensional simple complex Lie algebras was previously obtained in [4], which provided a concrete description up to automorphisms of these inner ideals in terms of roots. Both classifications are related, since clearly if B is an inner ideal of a real algebra L, then the complexification $B^{\mathbb{C}} = B \otimes_{\mathbb{R}} \mathbb{C}$ is an inner ideal of $L^{\mathbb{C}}$.

References

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