

Inner ideal structure of orthogonal Lie algebras

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Abstract. We describe the inner ideal structure of the orthogonal Lie algebras, not necessarily finite dimensional, over a field \mathbb{F} of characteristic not 2, dealing with linear maps instead of with matrices. Nevertheless, we will put particular emphasis on the finite dimensional case, where the Witt index of the bilinear form plays a fundamental role. It is amazing the fact that in D_4 the Clifford inner ideal is conjugate (by a diagram automorphism) to the maximal isotropic inner ideal. A phenomenon that has a Jordan counterpart: the isomorphism (obtained by functoriality) of the Jordan pair \mathcal{K}_4 of skew-symmetric matrices with entries in \mathbb{F} and the Jordan pair \mathcal{Q}_6 of a 6-dimensional nondegenerate symmetric bilinear form of maximal Witt index. A result known in the classification of the simple finite dimensional Jordan pairs over an algebraically closed field of characteristic 0.

References

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