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Solvable Lie Algebras with Nilradicals of Orthogonal Types

Let $n \geq 4$ be a positive integer, $\mathfrak{n}$ a maximal nilpotent subalgebra of the orthogonal algebra $o(2n, F)$ over a field $F$ of characteristic not 2, $\mathfrak{s}$ a solvable Lie algebra containing $\mathfrak{n}$ as its nilradical. This article shows that the dimension of $\mathfrak{s}$ is at most $\dim(\mathfrak{n}) + n$, and $\mathfrak{s}$ is isomorphic to the standard Borel subalgebra $\mathfrak{b}$ of $o(2n, F)$ if and only if $\dim(\mathfrak{s}) = \dim(\mathfrak{n}) + n$.

Keywords: Solvable Lie algebras, derivations, nilradicals.

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