Kaneyuki, Soji
On the subalgebras $\mathfrak{g}_0$ and $\mathfrak{g}_{ev}$ of semisimple graded Lie algebras. (English) Zbl 0790.17015
J. Math. Soc. Japan 45, No. 1, 1-19 (1993).

In [Nagoya Math. J. 112, 81-115 (1988; Zbl 0699.17021)] the author and *H. Asano* gave a classification of finite dimensional semisimple graded Lie algebras over $\mathbb{R}$ in terms of their restricted fundamental root systems. Studying gradations of the type $g = g_{-2} \oplus g_{-1} \oplus g_0 \oplus g_1 \oplus g_2$ for such a Lie algebra g, the author describes here the subalgebra g_0 for each gradation. Moreover for any classical simple Lie algebra g the subspaces g_{-2}, g_{-1}, g_1, g_2 are determined as well.

This result gives the infinitesimal classification of a class of homogeneous symplectic manifolds, called simple parakähler coset spaces of second kind. Finally the author gives the list of simple (affine) symmetric pairs (g, g_{ev}), where g is a (finite dimensional) real simple Lie algebra with a gradation $g = g_{-2} \oplus g_{-1} \oplus g_0 \oplus g_1 \oplus g_2$ and $g_{ev} = g_{-2} \oplus g_0 \oplus g_2$.

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MSC:

17B70	Graded Lie (super)algebras
17A40	Ternary compositions
17C50	Jordan structures associated with other structures
53C30	Differential geometry of homogeneous manifolds

Keywords:

semisimple graded Lie algebras; restricted fundamental root systems; homogeneous symplectic manifolds; simple parakähler coset spaces

Full Text: DOI