

On homogeneous parakaehler manifolds

Shaoqiang Deng

matdsq@263.net

Department of Mathematics, Nankai University, Tianjin, China

A parakaehler manifold is, by definition, a symplectic manifold which admits a pair of transversal Lagrangian foliations. It is called homogeneous if the group of all symplectomorphisms acts transitively on the manifold. The algebraic condition for the existence of invariant homogeneous parakaehler structure on a coset space was obtained by S. Kaneyuki. Kaneyuki introduced the notions of dipolarizations and weak dipolarizations in Lie algebras. A fundamental problem on homogeneous parakaehler manifolds is the classification and construction of such manifolds. This was settled partially by Hou, Deng, Kaneyuki and Nishiyama. In fact, they have classified all the dipolarizations in a (real or complex) semisimple Lie algebra. This talk will introduce the above result and some further possible developments will be discussed. Remark: This talk is the joint work of Prof Hou zixin and me.