

### Plans of my research.

I have studied isotropic submanifolds of a real space form before, and have been interested in the theory of homogeneous space in the process.

Saying Riemannian manifolds a generalized concept of Euclidean space, we may say symplectic manifolds a generalized concept of phase space by the Darboux theorem, so that we find that symplectic manifolds possess not only mathematical aspects but also physical aspects. Especially, there exist these aspects in symplectic homogeneous spaces: for example, there exists a relation between the symplectic homogeneous space and the coadjoint orbit; the action of transformation group is Hamiltonian when a symplectic homogeneous space is simply connected.

Riemannian symmetric spaces have been classified by É. Cartan, and the classification has an effect on various fields of mathematics. For the reasons, I set a goal to classify symplectic homogeneous spaces. I have classified all infinitesimal versions of symplectic homogeneous space with the transformation group compact semi-simple, so that I study the case where the transformation group is non-compact. In the future, I would like to study the theory of knot in phase spaces and in symplectic homogeneous spaces.