The intersection of two real flag manifolds in a complex flag manifold

Abstract. Tanaka and Tasaki studied the antipodal structure of the intersection of two real forms in Hermitian symmetric spaces of compact type. An orbit of the adjoint representation of a compact connected Lie group G admits a G-invariant Kähler structure, and called a complex flag manifold. Furthermore, any simply-connected compact homogeneous Kähler manifold is a complex flag manifold. Using a torus action, we can define (generalized) antipodal sets of a complex flag manifold. An orbit of the linear isotropy representation of the compact symmetric space G/K is called a real flag manifold, and is embedded in a complex flag manifold as a real form. In this talk, we will give a necessary and sufficient condition for two real flag manifolds, which are not necessarily congruent with each other, in a complex flag manifold to intersect transversally in terms of symmetric triads. Moreover we will show that the intersection is an orbit of a certain Weyl group and an antipodal set, if the intersection is discrete. This talk is based on a join work with Osamu Ikawa, Hiroshi Iriyeh, Takayuki Okuda and Hiroyuki Tasaki.