Lie Group and Representation Theory Seminar Kyoto 2007

Date: March 13 (Tue), 2007, 16:30–17:30
Place: Room 402 RIMS, Kyoto University
Speaker: Peter Trapa   Utah, USA)
Title: On the Matsuki correspondence for sheaves.

Abstract: Suppose G is a real reductive group with maximal compact subgroup K. Let X denote the flag variety for the complexified Lie algebra of G, and let K_C denote the complexification of K. Nearly thirty years ago, Matsuki established an order-reversing bijection between the sets of K_C and G orbits on X. Later Mirkovic-Uzawa-Vilonen extended this to an equivalence of K_C-equivariant and G-equivariant sheaves on X (a result originally conjectured by Kashiwara). Meanwhile, to each such kind of sheaf, Kashiwara showed how to attach a Lagrangian cycle in the cotangent bundle of X. Composing this characteristic cycle construction with the Mirkovic-Uzawa-Vilonen equivalence, one obtains an isomorphism between the top-dimensional homology of the conormal variety for K_C orbits on X and the top-dimensional homology of the conormal variety for G orbits on X. Schmid and Vilonen proved that this isomorphism is compatible with the Kostant-Sekiguchi correspondence of nilpotent orbits. The purpose of this talk is to give a finer explicit computation of a suitable "leading part" of the isomorphism in homology.