

abstract

GEOMETRIC PDE SEMINAR

Topic:

Speaker:

Affiliation:

Date:

Time/Room:

The de Rham complex is a prototype for a large class of sequences of differential operators often called (generalized) Bernstein-Gelfand-Gelfand BGG sequences. Conformal manifolds admit such sequences and on locally conformally flat manifolds the sequences are elliptic complexes (in fact locally exact). These complexes are closely linked to the complexes constructed and treated by D. Spencer, Gasqui, Goldschmidt and others starting in the 1950's, in relation to deformations of geometric structures and the study of overdetermined PDE. A basic example is a complex which controls the deformation theory of conformally flat manifolds. On conformally curved manifolds the BGG sequences no longer form complexes and so have limited application. It turns out that certain related sequences of differential operators do yield conformally invariant elliptic complexes on curved conformal manifolds and hence yield global conformal invariants. The study of these "detour complexes" is in its early stages and there are many open problems. The basic results and applications will be sketched. The latter include links to, and generalizations of, the Q-curvature.