

abstract

SPECIAL LECTURE

Topic:

Speaker:

Affiliation:

Date:

Time/Room:

I am going to talk about triangulated categories in algebra, geometry and physics and about differential-graded (DG) enhancements of triangulated categories. I will discuss such properties of DG enhancements as uniqueness and existence. It can be proved that a uniqueness of DG enhancements exists for a large class of triangulated categories. This class includes all derived categories of quasi-coherent sheaves, bounded derived categories of coherent sheaves and category of perfect complexes on quasi-projective schemes, as well as on noncommutative varieties. This result shows that triangulated categories which have a geometric nature are largely distinguished among all triangulated categories; for which this property does not hold in general. One consequence of these results is a theorem asserting that an existence of a fully faithful functor between such categories implies an existence of a fully faithful functor between them that has integral form, i.e. that is represented by an object on the product. Moreover, for projective varieties there is a strong uniqueness for DG enhancements, which implies that any fully faithful functor from the category of perfect complexes on the projective variety to another category of this type has integral type, i.e. it is represented by an object on a product. These results have also application to deformation theory of objects in derived categories and to homological mirror symmetry. This is a joint paper with Valera Lunts.