School of Mathematics
Tata Institute of Fundamental Research

Mathematics Colloquium

Speaker	:	***Sudeshna Roy***
Affiliation	:	***TIFR, Mumbai***
Title	:	***Graded components of local cohomology modules supported on C-monomial ideals.***
Date & Time	:	***Thursday, 2 February, 2023 at 4.00 p.m.***
Venue	:	***Lecture Room (AG-69)***

Abstract

The structure of local cohomology modules is quite mysterious owing to their non-finite generation. Over the last three decades, researchers have extensively investigated if they behave like finitely-generated modules. Let A be a Dedekind domain of characteristic zero such that its localization at every maximal ideal has mixed characteristic with finite residue field. Let $R = A[X_1, \ldots, X_n]$ be a polynomial ring equipped with the standard multigrading and let $I \subseteq R$ be a C-monomial ideal. We call an ideal in R a C-monomial ideal if it can be generated by elements of the form aU where $a \in A$ (possibly nonunit) and U is a monomial in X_i's. Local cohomology modules supported on usual monomial ideals of a polynomial ring over a field gains a great deal of interest due to its connections with combinatorics and toric varieties. The objective of this talk is to discuss a structure theorem for the multigraded components of the local cohomology modules $H^i_I(R)$ for $i \geq 0$. We will further show that if A is a PID then each component can be written as a direct sum of its torsion part and torsion-free part. This result evinces finiteness of their Bass numbers. This is joint work with Tony J. Puthenpurakal.

Milind Pilankar