THE THIRTEENTH COLLOQUIUMFEST

Speaker:

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Title:

Jumping numbers and multiplier ideals for complete ideals of 2-dimensional regular local rings

Abstract:

Multiplier ideals are a recent and important tool in Singularity Theory and Birational Geometry. They have the virtue of giving information on the type of singularity corresponding to an ideal, divisor or metric and of accomplishing several vanishing theorems which makes them very useful. The family of multiplier ideals is totally ordered by inclusion and parameterized by a set of non-negative rational numbers named jumping numbers. In spite of the utility of multiplier ideals, to compute them is hard and very few generic explicit computations are known.

In the talk, we will consider a 2-dimensional regular local ring R over the complex field and a complete ideal I of R. When I is simple, we will recall which are its jumping numbers (computed by Järvilheto) and we will introduce the Poincaré series of multiplier ideals of I. This is an algebraic object that gathers in an unified way the jumping numbers and the dimensions of the vector spaces determined by the quotients of consecutive multiplier ideals of I. An explicit and very simple formula for this series will be given. In the non-simple case, we will show an explicit formula for computing the least jumping number, called log canonical threshold, of I. This formula will be deduced from other one we will give for reduced germs of plane curves. This last formula works for any field and depends on the first two maximal contact values of the branches and their intersection multiplicities.

The results in the talk have been obtained jointly with F. Monserrat and, in the log canonical threshold case, also with F. Hernando.