-Poincaré series and zeta function of monodromy for isolated singularities-

Let C be a complex irreducible plane curve with an isolated singularity. Some classical functions associated to C are the Poincaré series P and the zeta function of monodromy Z. Mysteriously they appear to be the same. This has been proven by A. Campillo, F. Delgado and S.M. Gusein-Zade.

A possible generalization of the Poincaré series to reducible curves uses the notion of extended semigroup of a curve singularity. The coefficients of P are then given as Euler characteristics of some explicitely described spaces. Another generalization of P is defined in terms of dimensions of some factors corresponding to a multi-indexed filtration on the ring O. Both generalizations coincide and Campillo & Co have shown that for a plane curve singularity the Alexander polynomial D (for irreducible curves D is essentially the same as Z) is again the same as the Poincaré series P.

Later on they reformulated the result such that D is written as a certain integral with respect to the Euler characteristic over O (ring of germs of functions on C). They applied this method to compute the Poincaré series of a multi-indexed filtration on the ring of germs of functions on a rational surface singularity and they computed the Poincaré series of a reducible curve singularity (not necessarily plane) embedded in a rational surface singularity.

In this talk we would like to explain some of these notions and results.