

On polynomial asymptotics and Ramis-Sibuya theorem

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Abstract

In a joint paper with M. Canalis-Durand and R. Schäfke, a notion of monomial asymptotics was introduced, in order to study doubly singular differential equations, i.e., singularly perturbed differential equations with a singularity in the parameter, and an irregular singularity in the variable.

In this talk, we propose a generalization of this notion, defining polynomial asymptotics in two variables. For this aim we use the reduction of the singularities of plane curves in order to reduce the polynomial to a normal crossing situation, where monomial asymptotics is applicable. Using reduction of singularities and cohomological arguments, we can prove a theorem of Ramis-Sibuya type suitable for this class of asymptotics.

It is a joint work with Reinhard Schäfke (Université de Strasbourg).