

Global study of regular holonomic systems

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We consider linear holonomic systems of regular singular type. Many hypergeometric functions in several variables, say Appell's ones and Lauricella's ones, satisfy such systems. We note that such hypergeometric functions are defined by some expressions of solutions, and not by the holonomic systems. Thus these holonomic systems are obtained by expressions of solutions. It is very hard to construct a holonomic system without knowing solutions, which is a main reason of the difficulty of the study of holonomic systems.

Then we are interested in constructing holonomic systems explicitly. I will introduce several recent developments in this direction – construction by using finite monodromy groups, by using singular locus, by using deformation equations.