

## Katz theory for KZ type equations and deformation

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The theory of rigid local systems by Nicolas Katz brought a new development for the study of Fuchsian ordinary differential equations. Then it is extended to the theory of ordinary differential equations with irregular singular points. Katz theory can be also extended to the theory of regular holonomic systems in several variables. We have defined the main notions in Katz theory – rigidity and middle convolution – for regular holonomic systems. In this talk, we explain how Katz theory brings new aspects to the study of regular holonomic systems.

We consider KZ type equations, which are linear Pfaffian systems of the form

$$du = \left( \sum_{i < j} A_{ij} \frac{d(x_i - x_j)}{x_i - x_j} \right) u.$$

First we briefly review the original Katz theory, and then explain how we extend it for KZ type equations. Then we apply Katz theory to get several new perspectives. Finally, we study deformations of Fuchsian ordinary differential equations from this viewpoint.