

Rational Hypergeometric Functions
in two Variables

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Rational A-Hypergeometric Functions

We denote as usual:

$$A = [a_1 | a_2 | \cdots | a_n] \in \mathbb{Z}^{d \times n}$$

and assume that:

- $\text{span}_{\mathbb{Z}}\{a_1, \dots, a_n\} = \mathbb{Z}^d$.
- $(1, \dots, 1) \in \text{rowspan}_{\mathbb{Q}}(A)$.

We set $\dim(A) := d - 1$; $\text{codim}(A) := n - d$.

Given $\beta \in \mathbb{C}^d$ we define

$$H_A(\beta) = \langle \partial^u - \partial^v : u, v \in \mathbb{N}^n, A \cdot u = A \cdot v ; \\ \sum_i a_{ij} x_i \partial_i - \beta_j ; j = 1, \dots, d \rangle$$

$$\subset \mathbb{C}\langle x_1, \dots, x_n, \partial_1, \dots, \partial_n \rangle.$$

We are interested in *rational hypergeometric functions* $F(x)$, i.e. rational functions with:

$$H_A(\beta) \cdot F = 0.$$

