**Abstract**

Let the differential system

$$z^D \frac{df(z)}{dz} = A(z) \cdot f(z), \quad f(z) = (f_1(z), f_2(z), ..., f_k(z)) \tag{1}$$

where $D$ is the diagonal matrix $p, p, ..., p$, $p \geq 2$, $p \in \mathbb{N}$ and the elements $\alpha_{ij}(z)$ of the matrix $A(z)$ are analytic functions in some neighborhood of the closed unit disc. In this paper under several assumptions with respect to the constant matrices $\{\alpha_{ij}(0)\}$, $\{\alpha'_{ij}(0)\}$, $i, j = 1, 2, ..., k$ and the diagonal $D$, it is proved that the conjugate system of (1) has exactly $k(p-1)$ linearly independent solutions in the product space $H_2(\Delta)^k$, where $H_2(\Delta)$ is the usual Hilbert space of analytic functions in the open unit disc.