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1003-35-1123      **Alicia Dickenstein** and **Timur Sadykov\*** (tsadykov@uwo.ca), Department of Mathematics,  
The University of Western Ontario, London, Ontario N6A 5B7, Canada. *A basis in the solution  
space of the Mellin system.* Preliminary report.

We consider algebraic functions satisfying general algebraic equations with symbolic coefficients, i.e., equations of the form

$$a_0 z^m + a_1 z^{m_1} + a_2 z^{m_2} + \dots + a_n z^{m_n} + a_{n+1} = 0.$$

Here  $m > m_1 > \dots > m_n$ ,  $m, m_i \in \mathbb{N}$ , and  $z = z(a_0, \dots, a_{n+1})$  is a function of the complex variables  $a_0, \dots, a_{n+1}$ . Solutions to such equations are classically known to satisfy holonomic systems of linear partial differential equations with polynomial coefficients. In this paper we investigate one of such systems of differential equations which was introduced by Mellin. We compute the dimension of the space of complex analytic solutions to the Mellin system and construct a basis in this space. (Received October 04, 2004)