1075-30-151 **Timur Sadykov*** (sadykovtm@rsute.ru), Russian State University, of Trade and Economics, Moscow, 125993, Russia. *On analytic complexity of special functions.*

The Kolmogorov-Arnold theorem yields a representaion of a multivariate continuous function in terms of a composition of functions of at most two variables. In the analytic case, understanding the complexity of such a representation naturally leads to the notion of the analytic complexity of a bivariate (multi-valued) analytic function introduced and studied by V.K.Beloshapka (Russian J. Math. Phys. 14, no. 3, 2007, pp. 243-249.). According to Beloshapka's local definition, the order of complexity of any univariate function is equal to zero while the n-th complexity class is defined recursively to consist of functions of the form $a(b(x, y) + c(x, y))$, where a is a univariate analytic function and b and c belong to the $(n - 1)$-th complexity class. With such a hierarchy of complexity classes, one can associate a number of differetial and algebraic invariants. A randomly chosen bivariate analytic function will most likely have infinite analytic complexity. However, for a number of important families of special functions their complexity is finite and can be computed or estimated. Using properties of solutions to the Hopf equation and the Gelfand-Kapranov-Zelevinsky system we obtain estimates for the analytic and polynomial complexity of such functions as well as plane webs. (Received August 28, 2011)