Ordinary and partial Fuchsian type equations associated to the root systems in mathematical physics.

The paper is devoted to one side of one- and multidimensional Rieman-Hilbert problem, that is the problem of recovery of the differential equation when the monodromy representation of its solution is given. After A. Bolibrukh, it is known that in one-dimensional case this problem in general has negative solution. But in multidimensional case there are many cases when it has positive solution. This is the case of class of Knizhnik-Zamolodchikov (as proper so generalized) equations, associated to the different root systems. For the case of the root system $A_{n-1}$ the problem of correspondence of the monodromy representation of the braid group and the monodromy representation of the corresponding KZ equation was solved by V. Drinfeld and T. Kohno. For the case of the root system $B_n$ the similar problem was solved by V.Golubeva and V.Leksin. The succes of these investigations is explained by the fact that, for given representation of braid group we apriory have the form of differential equation which monodromy we wish to realize of. But for the other root systems ($G_2, F_4, E_6$ etc.) the forms of corresponding Fuchsian or generalized KZ equations are not known, also there are not known the spinor forms of the mentioned above KZ equations, for example, of the $B_n$ type equations, and for the root system $G_2$ some vector form of the KZ equation is known (M. Zamakhovskii and V. Leksin) and tensor form for $G_2$ case is given only in one particular case for the equations of four-point correlation function i n field theory (J. Fuchs).

The paper is devoted to the description of some achievements in construction of new equations of Fuchsian type and in solutions of the inverse monodromy problem. The problems are stated.