

**THE DECISION OF PROBLEMS MLS IN CONDITIONS OF INTERDEPENDENCE OF ASTRONOMICAL PARAMETERS. S.G. Valeev , T.E. Rodionova, V.E. Zharov Ulyanovsk State Technical University, st. Severny Venez, 32, Ulyanovsk, Russia**

In so-called parametrical models of data processing in which the basic result is the vector of MLS-estimations of parameters, the basic problem is decrease in influence of interdependence (multicollineation - MC) variables which amplifies because of presence at model statistically insignificant, but correlating with significant, composed. Unaccount MC results in significant casual and regular mistakes, and even at all to discouraging results. Influence MC can be lowered at use of the corresponding computing circuit of data processing.

Existing computing methods share on two classes: 1) methods parametrical estimations, applied to models of constant structure; 2) methods of structural - parametrical identification (SPI), changing structure of an initial model - hypothesis. The most perspective represent methods SPI, including at a stage estimations the orthogonal circuit Hausholder. An offered new method SPI - a method step ortogonalizing (MSO), possessing properties of a method of step-by-step regress (SR) to remove from structure one of duplicating variables on one of stages of processing, possesses an additional opportunity to keep a lot of estimated parameters, than in method SR. The developed system parametrical estimations (SPE) contains besides MSO methods of plural and step-by-step regress, a characteristic root both other methods and the procedures deciding problem MLS.

Research of application of a method SPI for descriptive models it was carried out by the example of processing radiointerferometer observations of outside of galactic sources. For processing have been taken 10 samples by volume from 9 up to 20 observations. It was supposed to determine values of 5 factors at regressors. It has been executed estimations the parameters of model by a method of step-

by-step regress which now is the most widespread method of definition of structure of model in problems of definition of differential amendments. The analysis of correlation matrixes specified samples allows to make a conclusion about presence of effect of interdependence of parameters, and also presence statistically insignificant composed in models.

With the help of a method of step-by-step regress was the models containing from 2 up to 3 estimations of significant parameters from 5 possible are received. With the help of a method SPI it was possible to receive up to 5 estimations for different samples. For comparison the general estimations of parameters the models received by various methods of processing, including plural and step-by-step regress have been considered. Estimations received by various methods for noncorrelation, significant composed (1 of 5 possible) practically coincide.

Further the analysis of methods step estimations with the help of external measures of quality of model has been executed. The applied external measures are based on the analysis of divergences between the forecast and known value of parameter of model. Value of the regular mistake caused in a general sense by a method of processing, and a random error for the considered methods of processing was compared. The received values of mistakes for researched methods are sizes of one order. It is necessary to note, that various strategy SPI have allowed to estimate the greater number perpeccopov and, opportunities having lowered effect of multicollineation.

Thus, results of processing the radiointerferometer observations by competing methods allow to draw a conclusion on high efficiency of a method SPI.