PROGRAMS OF THE *R*-MATRIX DESCRIPTION OF NEUTRON CROSS SECTION STRUCTURE

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A study of neutron fission and non-fission cross sections performed during many years in the Frank Laboratory of Neutron Physics allowed to accumulate a significant experience in the analysis of resonance structure of the cross section and of correlation effects in fission using a R-matrix formalism. We present a detailed description of the mathematical approach used for the analysis of experimental data with the help of FUMILI minimization in order to extract the parameters of structure of cross section or the correlation coefficients. The following examples are presented: the fits of the total, fission and capture cross sections for ^{235}U in the energy range up to 10 eV, and the fit of the total cross section for ^{181}Ta in the energy range up to 50 eV.

The corresponding codes were written in Fortran, calculations were performed using the FLNP and LIT computer farms at JINR.