

A known phase-functions method has been considered for calculation of a single-channel nucleon-nucleon scattering. The following phase shifts of a nucleon-nucleon scattering have been calculated numerically using the phase-functions method: nn (1S_0 -, 3P_0 -, 3P_1 -, 1D_2 -, 3F_3 -states), pp (1S_0 -, 3P_0 -, 3P_1 -, 1D_2 - states) and np (1S_0 -, 1P_1 -, 3P_0 -, 3P_1 -, 1D_2 -, 3D_2 - states). The calculations have been carried out using realistic nucleon-nucleon Nijmegen group potentials (NijmI, NijmII, Nijm93 i Reid93) and Argonne v18 potential. Numerically calculated phase shifts are in good agreement with the results obtained with the other methods. The full cross-section has been calculated using the obtained phase shifts. Our results are not very different from those obtained by using the known phases published in literature. The difference between calculations depending on a computational method of scattering phases makes: 0.2-6.3% for pp - and 0.1-5.3% for np - scatterings (for NijmI, NijmII), 0.1-4.1% for pp - and 0.1-0.4% for np -scatterings (Reid93), not more than 4.5% (Argonne v18).