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Summary

One of the main questions in astrophysics is the origin and the relative abundance of 36Cl and 36S isotopes and their production during the s-process of nucleosynthesis. A series of problems connecting with the uncertainties in the (n,p), (n,alpha) and (n,gamma) reactions leading to the decreasing or increasing of the concentration of 36Cl isotope were analyzed. The cross sections of mentioned reactions at the astrophysical relevant energies using Talys and Empire computer codes were evaluated. The theoretical calculations of cross sections for determination of isotopes astrophysical reaction rates were accomplished and the results are compared with experimental results from literature. These data are required for better understanding of the origin of the rare neutron rich isotopes in the S-Cl-Ar region and for evaluation of the 40K/40Ar chronometer.

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