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**Reconstruction of Neutron and Deuteron Energy Spectra in Z-pinch Experiments**<sup>1</sup> KAREL REZAC, DANIEL KLIR, PAVEL KUBES, JOSEF KRAVARIK, Czech Technical University in Prague, FEE, Department of Physics, S-300 TEAM — The neutron energy spectra were reconstructed in Z-pinch experiments where deuterium atoms were present in a load. The reconstruction was based on the time-of-flight method in which time-resolved neutron detectors were placed at various distances from the neutron source. There are several theoretical approaches to the development of reconstruction algorithms (Monte Carlo, etc.). The improved Monte Carlo reconstruction technique, which simultaneously used neutron detectors placed on two opposite sites from the source, was applied to process data from experiments on the S-300 generator (Kurchatov Institute, Moscow). Since these experiments contained a small number of neutron detectors in one direction, a specific reconstruction procedure was used. From the reconstructed neutron energy spectra, also the energy distribution function of deuterons producing fusion neutrons could be calculated. The characteristics of the neutron scintillation detector and the influence of scattered neutrons were taken into account to estimate the error in the reconstruction.

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