

Modified reconstruction of neutron spectrum emitted in dense plasma focus devices by MCNP code and monte-carlo method.

ABSTRACT

In this study we present Monte Carlo method for obtaining the time-resolved energy spectra of neutrons emitted by D-D reaction in plasma focus devices. Angular positions of detectors obtained to maximum reconstruction of neutron spectrum. The detectors were arranged over a range of 0–22.5 m from the source and also at 0°, 30°, 60°, and 90° with respect to the central axis. The results show that an arrangement with five detectors placed at 0, 2, 7.5, 15 and 22.5 m around the central electrode of plasma focus as an anisotropic neutron source is required. As it shown in reconstructed spectrum, the distance between the neutron source and detectors is reduced and also the final reconstructed signal obtained with a very fine accuracy.

Keyword: Plasma focus; Neutron reconstruction; MCNP; Monte-carlo.