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**Magnetic spectrometry of deuteron spectra in plasma focus device** MAHMUD VAHDAT ROSHAN, ALIREZA TALEBITAHER, RAJDEEP SINGH RAWAT, PAUL LEE, STUART VICTOR SPRINGHAM — Magnetic spectrometry using polymer nuclear track detectors is used for high-resolution measurement of the energy spectrum of deuterons emitted from the pinch-column of the NX2 plasma focus (PF). The spectrum is measured for single PF shots. A 25  $\mu\text{m}$  pinhole images the deuteron source on the spectrometer. Deuteron tracks are measured with an automated scanning system. The recognized and counted tracks are accumulated in a histogram of track displacement in bins representing equal energy stripes on the detector. A very distinct neutrals spot is clearly visible for each spectrum, resulting from uncharged deuterons passing through the spectrometer in straight-line paths and producing a densely tracked zone. The deuteron trajectory in the magnetic field is calculated in order to obtain the deuteron energy as a function of the distance from the neutrals spot on the detector. The deuteron spectrum  $d^2N/dEd\Omega$  is derived from the track displacement histogram. The deuteron spectrum is used to estimate the beam-target contribution for fusion neutron production. The number of Nitrogen-13 nuclides in the activation of graphite through  $^{12}\text{C}(d,n)^{13}\text{N}$  is estimated using the deuteron spectra and the thick target yield.

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