

Abstract Submitted
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Neutron and X-ray emissions in the FN-II dense plasma focus with needle implanted electrodes¹ JULIO HERRERA, FERMIN CASTILLO, JOSE RANGEL, ISABEL GAMBOA, Instituto de Ciencias Nucleares, UNAM, GUILLERMO ESPINOSA, JOSE-IGNACIO GOLZARRI, Instituto de Física, UNAM — Plasma foci are efficient plasma based X-ray and neutron sources, when deuterium is used as the filling gas. The dense plasma focus FN-II is a small device (4.7 kJ), in which the emission of deuterium fusion neutrons (2.45 MeV) are studied. The system produces an averages neutron yields of $(5.3 \pm 0.5) \times 10^8$ neutron/shot into 4π sr at ~ 350 kA peak discharge current and 2.75 torr deuterium operation. Three methods are currently used to detect them; silver activation counters and CR-39 nuclear track detectors, for time integrated and angular distribution studies, and BC 400 scintillators coupled to photomultiplier tubes for spectra studies. Soft X-rays are studied with a pin-hole camera, as well as with arrangements of three PIN detectors filtered by different materials, such as Be, Ti, Ni, Mo, and Al. In this work we show the results obtained when needle implanted electrodes are used, and compare them with those of a flat electrode. There has also been a dosimetric study of the laboratory with TLD dosimeters, which will be presented in this report.

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