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# Apparatus neutron sources at IFJ PAN for basic and application research

*Friday, 13 September 2019 12:05 (30 minutes)*

Two types of apparatus neutron sources are present at IFJ PAN: neutron generator (IGN-14) and two plasma focus devices (PF-4 and PF-24). IGN-14 is a pulsed deuteron accelerator which generates 14 MeV or 2.45 MeV neutrons, when a tritium T/Ti or deuterium D/Au target is used, respectively. The plasma focus is a device that produces, by electromagnetic acceleration and compression, short-lived, hot and dense plasma in a gas. This plasma emits fast neutrons produced by nuclear fusion reaction when a deuterium or deuterium mixture is a working gas. These sources are used for basic and application research. The fundamental studies cover (among others) the research of plasma and nuclear fusion, the determination of plasma parameters and imaging, as well as computer modeling of the nuclear radiation. The applications include the testing of the detectors. As an example: the studies of the neutron emission from discharges in deuterium, in PF-24, and elaboration of a method for detection of explosives and other illicit materials by a single nanosecond neutron pulses with using Monte Carlo methods, will be presented.

## Collaboration

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