Fusion product diagnostics at the Gas dynamic trap [[1]](#footnote-1)\*)

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Pinzhenin E., Maximov V.

BINP SB RAS, Novosibirsk, Russia, e.i.pinzhenin@inp.nsk.su

The report describes the fusion product diagnostics at the Gas Dynamic Trap (GDT) facility. The structure of diagnostics includes the following three subsystems. Scintillation detectors based on SPM-5 plastic scintillator and photomultiplier tube. The detectors are sensitive to hard X-rays and neutrons, operate in the current mode, are located outside the vacuum chamber and record the intensity of the deuterium fusion reaction with a time resolution of up to 25 μs. The detectors of 3.02 MeV protons are located inside the vacuum chamber of the GDT, operate in the counting mode, and allow absolute measurements of the flux of fusion products with a time resolution of 100 μs and a spatial resolution of several tens of centimeters. A neutron and gamma ray spectrometer based on a stilbene scintillator and a PMT makes it possible to record the spectra of particles of various types, including those in the operating modes of the GDT in which superheated electrons are generated.

The diagnostic complex makes it possible to carry out absolute measurements of the flow of thermonuclear reaction products, to optimize the plasma confinement regimes in the GDT facility in terms of the thermonuclear reaction intensity parameter, to study the evolution of the fusion reaction intensity in experiments on plasma heating by various methods, with the study of plasma instabilities.

1. \*) [abstracts of this report in Russian](http://www.fpl.gpi.ru/Zvenigorod/L/Mu/ru/BG-Pinzhenin.docx) [↑](#footnote-ref-1)