Globus-M2 plasma DIAGNOSTICS with the scanning npa system [[1]](#footnote-1)\*)

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The report is devoted to the study of the core plasma and high energy ions in the Globus-M2 tokamak [1] with the help of a new scanning Neutral Particle Analyzer (NPA) system. The system consists of two ACORD-type analyzers [2]. The scanning system of ACODR-12 analyzer provides the ability to change the line of sight in the horizontal plane at an angle of 15 degrees relative to the line directed to the center of the tokamak; and in the vertical plane at an angle of ±10 degrees relative to the equatorial plane. For the characteristic magnetic configuration of the Globus-M2 tokamak, this scanning system allows detecting particles with pitch-angles from 70 to 150 degrees. The scanning system of the Akord-24M analyzer has an impact parameter coinciding in the Equatorial plane with the impact parameter of the neutral beam injector. It allows to rotate the line of sight of the analyzer in the vertical plane at an angle of ± 10 degrees relative to the Equatorial plane.

Experimental data was obtained at plasma currents of 200-350 kA and toroidal magnetic fields of 0.5-0.75 T. Studies were conducted in deuterium plasma in discharges with lower divertor configuration. Modes with Ohmic heating and with additional heating by injection of hydrogen and deuterium atoms with energy of 20-28 keV were studied. The report discusses the features of measuring the ion temperature profile in the central part of the plasma using NPA. The results of measuring the anisotropic distribution of high energy ions are shown. The possibilities of NPA diagnostics in the region of energies above the injection energy are demonstrated. Experimental data is compared with simulation.

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References

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2. Izvozchikov A. B. et al. 1992 Technician. Physics. 37 201.

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