STEREOTACTIC PROTON THERAPY AT PNPI SINCHROCYCLOTRON

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During 1992–1993 the computer control of whole system of proton stereotactic therapy (PSTSC) at a PNPI synchrocyclotron has been performed.

The control system includes a doze measurement subsystem (DMSS, Fig.), a subsystem of proton beam test and stabilization of the beam intensity (PBCSS), a control subsystem of a patient turntable and X-ray diagnostic of a patient target (PCSS).

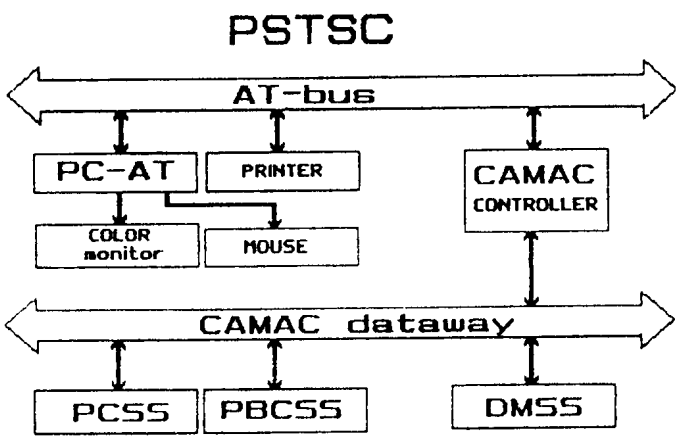

Fig. Block-scheme of Control system — PSTSC

The control system reproduces a depth doze field distribution with the accuracy of 2%, a measurement of radiation doze value at the level 5%, a constancy of the target isocentre — 0.5 mm.

The results of the patient treatment at PNPI Synchrocyclotron are given in Tables 1–3.

Table 1

Experience of stereotactic proton therapy in 1992–1993

	Hypophysectomy		
Total number of patients	Normal petuitary	Pituitary adenomas	Arterio-venous malformations
111(27)	19	30	62(27)

In brackets the number of repeated treatment of patients is given.

Table 2

Normal pituitary

Total number of patients	Cancer of the breast	Ophthalmo-pathy	Diabetic angio-retionopathy	Cancer of prostatic
19	7	1	1	10

Table 3

Pituitary adenomas

Total number of patients	Itsenko–Cushing's disease	Prolasti-noma	Somatotropi-noma	Non-functioning
30	11	7	9	3

Results of patients treatments in 1992–93 are being analyzed now.