Table 3

Experience of pituitary adenomas

Total number of patients	Itsenko-Cushing disease	Prolasto-nomic	Somatotrophi-nomic	Non-functioning
27	10	7	9	1

Resalts of patients treatments in 1994-95 are beeng analized now.

DEVELOPMENT OF THE EXPERIMENTAL METHODS TO SEARCH AND STUDY OF T-NONINVARIANT EFFECTS IN RESONANCE NEUTRON INDUCED REACTIONS WITH COMPLEX NUCLEI

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Considerable recent attention has been focussed on the possibilities to search and investigate the new T-noninvariance effects (TNE) in some neutron induced reactions. Interest to such investigations was created as a result of drastic enhancement of P-odd effects observed in the vicinity of the weak p-wave neutron resonances like 0.734 eV one of ^{139}La.

In the context of importance of the problem some laboratories (Los Alamos, KEK, JINR) have begun an essential preliminary to these experiments. The main problems to have to be solved now for realisation these experiments are as follows:

— the availabity of the polarized resonance neutron beams with a high intensity;

— development of the polarized nuclear target from 139-La;

— development the effective and precise methods to control and suppress different false instrumental effects which are inevitably arose in such types of experiments.

Two possible ways to develop high flux resonance neutron source ($E_n < 10$ eV) at the steady nuclear reactor WWR-M were tested and compared in the Laboratory of Fission Physics in 1993-1995. In collaboration with RSC ITEP four synchronized rotor system of neutron monochromator has been put into operation at the radial neutron beam [2]. Under conditions of WWR-M reactor (flight-path about 9 m, W $\simeq$ 16 MW,channel diameter 60 mm) neutron intensity achieved, was $\sim 9 \cdot 10^4/E$ 1/cm^2·s·eV. It means that for polarized neutrons (after polarized proton filter) the intensity can be not higher than $\sim 4 \cdot 10^3/E$ 1/cm^2·s·eV. This figure is comparable with the polarized neutron intensity at well known installation "POLYANA" in JINR ($\sim 6 \cdot 10^3/E^{[0.9]}$ 1/cm^2·s·eV)with the same flight path but for more wide neutron energy range [2]. The second possibility to get polarized resonance neutron beam ($E_n \leq 2$ eV) of high intensity about $2 \cdot 10^5$ 1/E 1/cm^2·s·eV was realized some years ago for systematic investigations of P-odd effects in nuclear fission process [3]. It consists in use of neutron diffraction at Heisler alloy crystal magnetized up to suturation. One can

see that polarized neutron intensity achieved is higher than one at the most powerful pulsed neutron spallation source in Los Alamos [4]. Sure, one needs to keep in mind that with using of pulsed neutron source the measurements are performed for all energies of interest simultaneously as opposed to crystal diffraction monochromator. But taking into account possibility to increase polarized neutron intensity at the high flux reactors of ILL (France) or PIK type more than in 10^2 times, this instrument seems to be the most perspective one to search and investigate TNE in neutron reactions.

To study different false instrumental effects in the future TNE experiments and to develop the methods of its control and suppression the first special set-up was designed at polarising crystal diffraction monochromator of WWR-M [5], shown in Fig.

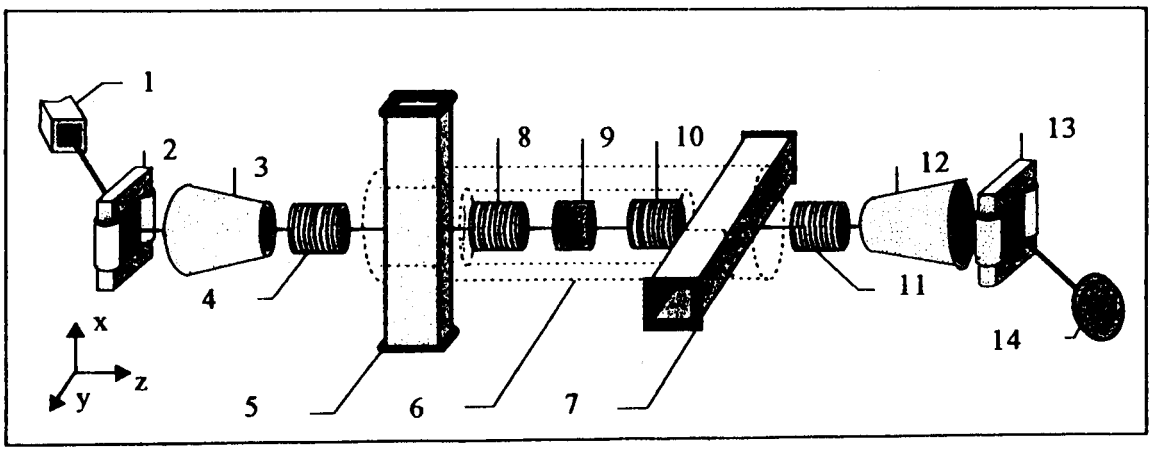

Fig. Sketch of experimental setup: *1* – Soller collimator; *2* – electromagnet with polarizing crystal; *3* – adiabatic "flipper"; *4* – "averaging" coil; *5* – "X-coil";*6* – two-layer magnetic shield; *7* –"Y-coil"; *8,10* – "Z-coil"; *9* – ^{139}La target; *11* – "averaging" coil; *12* – adiabatic "flipper"; *13* – electromagnet with polarizing crystal; *14* – neutron counter

Such an experimental set-up allows to simulate practically any magnetic field configurations of interest and to study neutron spin evolution in its passage through the whole installation. It has been shown as a result of experiments performed that undesirable transverse component of longitudinally polarized neutron beam can be suppresed in 10^3 times. Besides this installation has been used very successfully in the first investigations of P-odd effect of neutron spin rotation relative to the beam direction in the vicinity of 0.734 eV resonance of ^{139}La (see this book).

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