found that ^{115}In, ^{107}Ag, and ^{189}Os would be feasible. Their features found out are summarized as in the following:

^{115}In: Cannot be used for backward emission angles. However, the accuracy is the best at 0 deg.
^{189}Os: Only nuclide which can be used in backward angles. However, the gamma-ray energy is a little too low.
^{107}Ag: The most convenient foil, since the half life is short.

In the next step, validity of these foils will be examined experimentally using a p-Li neutron source.

PS2 P 05
Potential application of NIPAM polymer gel for dosimetric purposes in BNCT

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Boron neutron capture therapy (BNCT) is based on selective accumulation of ^{10}B inside the tumor cells with subsequent irradiation of tumor using neutron beam. In general, total dose from BNCT can be attributed to four components: the gamma dose, epithermal and fast neutrons dose, the dose from thermal neutron captured in ^{14}N and the dose from thermal neutron captured in ^{10}B. Since the dose components have different relative biological effectiveness (RBE), the dose distribution measurement in different normal and tumor tissues is very important. To determine the total dose delivered to the patient and to predict the therapeutic effectiveness of BNCT, the dose components must be measured by particular dosimetry procedure. The principal method recommended for determining fast and epithermal neutron and photon dose is dual ionization chamber technique. The dose contribution from thermal neutron captured in nitrogen-14 and boron-10 is calculated from the measured thermal neutron flux. Although these methods are commonly used in clinical dosimetry of BNCT, they have some disadvantages such as: 1) dosimetric process is very *time-consuming*. 2) The thermal neutron doses are not measured directly. 3) require two different dosimetric methods to detect various radiation types and total dose calculation. 4) Ionization chambers need several correction factors. To overcome these limitations, a more efficient and reliable dosimeter is needed. Since the polymer gel dosimeters are normally tissue equivalent and are able to record dose information in three-dimensions with sufficient spatial accuracy, therefore could be a suitable option for dosimetric purposes in BNCT. The study is currently in progress to explore the applicability of NIPAM gel in BNCT.

PS2 P 06
Problems of neutron spectrum measurements with TOF technique and their solutions

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At BINP it is constructed and launched the tandem accelerator with vacuum insulation for BNCT. Results achieved in long stable generation of neutrons at 1 mA proton beam allowed us to measure neutron spectrum using time-of-flight (TOF) technique. To create short neutron pulses it is applied a new technical solution, which is briefly described below. Accelerator operates in a stationary mode, generating protons with energy 1.875 MeV, just below the neutron production threshold. Protons with subthreshold energy hit the electrically insulated lithium target, which at the same time is supplied with negative short (200 ns) square pulses having amplitude 40 kV and frequency 100 Hz. During each high voltage pulse the energy of protons increases up to 1.915 MeV and neutrons are generated. The energy of emitted neutrons is calculated after measuring the time gap between high-voltage pulse and neutron pulse in the remote neutron detector. Previously this method of generating short neutron pulses nobody applied, so we had to solve a number of unexpected problems that prohibit carrying out spectrum measurements. An interesting problem was the noise signal on the resulting neutron spectrum. It was discovered several sources of noise, namely: 1) scattered neutrons; 2) neutrons generated in the reactions $^{55}Mn(p,n)^{55}Fe$ and $^{63}Cu(\alpha,n)^{66}Ga$ (α-particles from $^{7}Li(p,\alpha)\alpha$ reaction), caused by proton beam interaction with construction materials; 3) high intensity γ-ray flow; 4) insufficient stability of the proton energy leading to unwanted neutron generation when the threshold 1.882 MeV is exceeded. Original technical solutions to suppress this noise and a special method of controlling signal-to-noise ratio are described in detail in this article. As a result of applying these solutions we were able to measure neutron spectrum using TOF at proton energy 1.915 ± 0.005 MeV. The resulting neutron spectrum compared with MCNP calculation is also presented in this work.

PS2 P 07

n_TOF (CERN) planning experiments to improve BNCT dosimetry: $^{35}Cl(n,p)$ and $^{14}N(n,p)$ cross section measurements.

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For BNCT treatments, dose delivery in tissue is obtained by means of kerma-fluence factors where the most important isotopes including in these calculations are ^{1}H, ^{12}C, ^{14}N, ^{16}O and ^{10}B. Furthermore, ^{35}Cl is also important for brain tumors since chlorine is present in higher concentration in brain than in the rest of the human body. The accuracy of the results strongly depends on the evaluated nuclear data included in the calculations. In order to improve the nuclear data available in the epithermal neutron energy range, a set of new cross-section measurements are planned to be performed at n_TOF, the spallation neutron time-of-flight facility at CERN consisting of two experimental areas (EAR). EAR-1 is located underground at 185 m from the spallation target in the direction of the incoming proton beam. In the last ten years it has been used for measuring neutron-capture and neutron-induced fission cross-sections of interest in