

## STUDY OF LEVEL STRUCTURE OF HEAVY HELIUM ISOTOPE $^8\text{He}$ IN STOPPED PION ABSORPTION

*Saturday, 17 October 2020 11:45 (25 minutes)*

An overview of experimental results on the level structure of heavy helium isotope  $^8\text{He}$ , obtained in the reactions of the stopped pion absorption by light nuclei, is presented. Excited states of the  $^8\text{He}$  were observed in several reaction channels on the  $^9\text{Be}$ ,  $^{10,11}\text{B}$  and  $^{12}\text{C}$  nuclei:  $^9\text{Be}(\pi^-,p)^8\text{He}$ ,  $^{10}\text{B}(\pi^-,pp)^8\text{He}$ ,  $^{11}\text{B}(\pi^-,pd)^8\text{He}$ ,  $^{11}\text{B}(\pi^-,^3\text{He})^8\text{He}$ ,  $^{12}\text{C}(\pi^-,p^3\text{He})^6\text{He}$ ,  $^{14}\text{C}(\pi^-,d^4\text{He})^8\text{He}$  and  $^{14}\text{C}(\pi^-,t^3\text{He})^8\text{He}$ . The results of measurements of the  $^9\text{Be}(\pi^-,p)^8\text{He}$  are presented for the first time. Important advantage of this method is the possibility to study with high statistics a wide range of excitation energies up to  $E_x = 40$  MeV.

Several levels with high excitation were found only in our measurements. Channels with correlated neutrons make a significant contribution to the continuous spectrum of studied reactions. Note that similar neutron correlations were observed in reactions of formation of heavy helium isotopes  $^6,7\text{He}$ .

A comparison with experimental and theoretical data other works is performed.

**Primary author:** Dr CHERNYSHEV, Boris (National Research Nuclear University "MEPhI")

**Co-authors:** Dr GUROV, Yuri (National Research Nuclear University "MEPhI"); Dr LAPUSHKIN, Sergey (National Research Nuclear University "MEPhI"); Ms LEONOVA, Tatyana (National Research Nuclear University "MEPhI"); Dr SANDUKOVSKY, Vyacheslav (National Research Nuclear University "MEPhI"); Dr TEL'KUSHEV, Michael (National Research Nuclear University "MEPhI")

**Presenter:** Dr CHERNYSHEV, Boris (National Research Nuclear University "MEPhI")

**Session Classification:** Section 1. Experimental and theoretical studies of the properties of atomic nuclei

**Track Classification:** Section 1. Experimental and theoretical studies of the properties of atomic nuclei.