

Latest developments of the Warsaw Optical Time Projection Chamber

mercredi 17 janvier 2018 17:25 (20 minutes)

The Optical Time projection Chamber (OTPC) [1] was built at the Faculty of Physics of the University of Warsaw as a tool to observe rare decays modes of exotic nuclei with charged particles emission. Over the years, the OTPC has been instrumental for the first direct observation of rare phenomena like two-proton and β -delayed three proton decay [2,3]. The detection of one decay event is sufficient to unambiguously identify the decay mode and establish its branching ratio.

In our detector, the gas amplification structure consists of an electrode followed by a stack of four gas-electron multiplier foils and an anode grid. The light produced by the electrons close to the anode is collected by a PMT and a CCD camera.

Over the last couple of years, several updates were carried on to enable the use of this powerful spectroscopic tool under very different experimental conditions (e.g. half-lives of the nuclei studies from few ms to over 10 seconds). Different gas mixtures were also tested. The results of this work and a future plans will be presented.

[1] M. Pomorski et al., Phys. Rev. C 90, 014311 (2014)

[2] K. Miernik et al., Phys. Rev. Lett 99 (2007) 192501.

[3] K. Miernik et al., Phys. Rev. C 76 (2007) 041304(R).

Authors: Mme SOKOŁOWSKA, Natalia (Faculty of Physics, University of Warsaw, Warsaw, Poland); FOR THE OTPC COLLABORATION (Faculty of Physics, University of Warsaw, Warsaw, Poland, JINR, Dubna, Russia)

Orateur: Mme SOKOŁOWSKA, Natalia (Faculty of Physics, University of Warsaw, Warsaw, Poland)