



Contribution ID: 273

Type: Oral

Muon capture on the deuteron: the MuSun experiment

Tuesday, 1 September 2015 15:45 (15 minutes)

QCD-based effective field theories are becoming increasingly more powerful in describing few-body nuclear systems. These models establish a quantitative relationship between muon capture rates and fundamental astrophysical processes from which cross sections can not be measured in the laboratory, such as pp fusion in our sun. The MuSun experiment is measuring the muon capture rate on the deuteron via a precise measurement of the lifetime of negative muons in deuterium. Such a measurement unambiguously determines the low energy constant related to the strengths of the axial coupling to the two nucleon-system. Located at the Paul Scherrer Institute, data-taking started in 2011, and a final production run is planned for this summer. In this talk, I will present the status of the experimental program and the progress of the data analysis towards a first physics result. In particular, I will discuss how we deal with the systematics related with the event selection in our active-target time projection chamber (TPC). This cryogenic TPC, filled with ultra-pure deuterium, enables us to unambiguously measure the capture rate of negative muons from the doublet state of a muonic deuteron atom.

Presenter: Dr WAUTERS, Frederik (University of Washington)

Session Classification: Few Body Systems