

Department of Physics & Astrophysics
University of Delhi

Seminar

Title: *Positronium in physics and medicine*

Speaker: **Prof. Paweł Moskal**

Affiliation: Jagiellonian University, Poland

Date: December 14, 2023 (Thursday)

Time: 3:30 P.M.

Venue: Seminar-cum-Committee Room

Abstract

The Jagiellonian Positron Emission Tomograph (**J-PET**) is the first PET scanner based on plastic scintillators. It is designed to measure momentum vectors and the polarization of photons originating from the decays of positronium. In combination with the newly invented positronium imaging method, J-PET enables the study of discrete symmetries in positronium without the use of magnetic fields. We will present the latest results of P, T, CP, and CPT symmetry studies with the J-PET detector [1,2] as well as explain the method of positronium imaging that enables imaging of positronium properties in living organisms [3,4]. The first in-vivo studies of positronium properties in the human brain will be also presented.

References:

- [1] P. Moskal et al., Nature Communications (2023) in print
- [2] P. Moskal et al., Nature Communications 12, 5658 (2021)
- [3] P. Moskal et al., Science Advances 7, eabh4394 (2021)
- [4] P. Moskal et al., Nature Reviews Physics 1, 527 (2019)