Contribution ID: **11** Type: **Nuclear and Particle Physics**

Two Photon and Radiation-less Decay of Positronium Molecule

Wednesday, 16 February 2022 13:48 (12 minutes)

It has been known for many years that an electron and its antiparticle, the positron, may together form a metastable hydrogen-like atom, known as positronium or Ps. In 1946, Wheeler speculated that two Ps atoms may combine to form the positronium molecule (Ps) stable with respect to auto-dissociation. In 2007 the existence of Ps was confirmed experimentally.
I will present a determination of the radiation-less and two photon decay rates of Ps. We employ a simple technique to compute the amplitudes and write the products of spinors in terms of gamma matrices, which reduces the computational time and provides more insights into the physics of a reaction. After testing the method with the well known problem of positronium, I will demonstrate that the previously published results are incorrect.

email address

mmubashe@ualberta.ca

Please select: Experiment or Theory

Theory

Primary author: MUBASHER, Muhammad (University of Alberta)

Presenter: MUBASHER, Muhammad (University of Alberta)

Session Classification: Particle Physics