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REPRESENTATION OF ELECTRON AND POSITRON INTERACTIONS WITH BIOMOLECULES WITHIN RADAM DATABASE

Bratislav P. Marinković[1,3], Veljko Vujčić[2,4], Stefan Ivanović[3], Dara B. Marinković[4], Guy Rixon[5], Gustavo García[6], Darko Jevremović[2] and Nigel J. Mason[7]

[1]Institute of Physics, University of Belgrade, Pregrevica 118, P.O.Box 68, 11080 Belgrade, Serbia
E-mail: bratislav.marinkovic@ipb.ac.rs
[2] Astronomical Observatory, Volgina 7, P.O.Box 74 11060 Belgrade, Serbia
E-mail: veljko@aob.rs
[3]School of Electrical and Computer Engineering of Applied Studies, Vojvode Stepe 283, 11000 Belgrade, Serbia
[4]Faculty of Organizational Sciences, University of Belgrade, Jove Ilića 154, 11000 Belgrade, Serbia
[5] University of Cambridge, Madingley Road, Cambridge CB3 0HA
[6]Instituto de Física Fundamental (IFF), Consejo Superior de Investigaciones Científicas (CSIC), Serrano 113-bis, 28006 Madrid, Spain
[7]The Open University, Department of Physical Sciences, Walton Hall, Milton Keynes, MK7 6AA, United Kingdom

The RADAM database has been established by a consortium of researchers within the COST Action MP1002 "Nanoscale Insights into Ion-Beam Cancer Therapy" (Nano-IBCT) to provide a repository for data necessary for understanding radiation damage of biomolecular systems. The RADAM database is comprised of several nodes' two of which are focused on leptonic interactions (electrons and positions) with biomolecules.[1]. It was agreed that CSIC in Madrid would compile data on low energy (0 – 10 keV) positron interaction cross sections and energy loss in biomolecular systems while the group in Belgrade would concentrate on electron interactions. However the first database in this area was established by The University of Innsbruck and concentrates on electron dissociative attachment [2].

In this poster we present updates on the Belgrade database eMOL-RADAM [3]. This database exploits the data model created by the VAMDC (Virtual Atomic and Molecular Data Centre) consortium [4].and been described in detail elsewhere [5,6]. The current database has been already integrated into the RADAM portal [7] as a database node. The current idea is to host both Belgrade and Madrid (Posmol-RADAM) databases on a single server located at the Astronomical Observatory Belgrade. Current set of electron interaction data comprises differential and integral cross sections for atoms (Mg, Hg) and molecules (water, nitrous-oxide, formamide [8], pyrimidine, THF). Test case for positron interaction data is a review on recommended cross sections for positrons in Ar (total, elastic, positronium formation, ionization, total excitation cross sections) [9].

Further developments of database will involve design of the graphic interface for 3D representation of differential cross section as a function of impact energy and scattering angle. The main problems foreseen for the long sustainability of such solution is in loading a numerous data sets of cross sections and updating with new entries as the community generates large datasets in the future and these will be discussed in the poster.

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