SAINT MARY'S COLLEGE of CALIFORNIA

SCHOOL OF SCIENCE

Department of Physics and Astronomy
Assistant Professor Candidate Talk

Electron and photon impact induced processes in molecules

In this talk I will discuss a variety of processes associated with the collision between a low-energy electron and a polyatomic molecule. Theoretical models will be presented to describe the reaction of Dissociative Recombination (DR) in highly-symmetric molecular ions. Taking into account the main ingredients of the DR process, it will be shown that accurate DR cross sections, reproducing the main trends of different experimental data, can be computed for several polyatomic ions. I will also analyze results of momentum imaging techniques in the dissociative electron attachment (DEA) of biomolecules, and will take the interesting cases of uracil and furan to show how one can predict the main angles of dissociative fragments emission. I will also discuss photoionization reactions and show how one can potentially image the geometry of a molecule in real-time. In the last part of my talk, I will present my future research plans, which include, but are not limited to, the study of formation and dissociation of astrophysically relevant molecules, such as H_3^+ and H_2CN, as well as of biomolecules.

Dr. Samantha Fonseca
Drake University

Friday Feb 24
1:30-2:30pm
Galileo 110