DAMOP18-2018-000543

Abstract for an Invited Paper
for the DAMOP18 Meeting of
the American Physical Society

Electron and Ion Reactions at Low Energies.

ASA LARSON, Stockholm University

Theoretical studies of low-energy electron-molecule and ion-ion scattering processes require computations of highly excited electronic states. Non-adiabatic effects are crucial to consider and structure calculations are combined with electron scattering calculations. Ab initio and fully quantum mechanical studies limit the investigations to diatomic or triatomic molecular scattering complexes. Often various strictly or quasi-diabatic representations of the electronic states are applied. We have studied various processes such as dissociative recombination, ion-pair formation, dissociative attachment, vibrational or dissociative excitations following electron collisions with diatomic and triatomic molecules. We also investigate the mutual neutralization reaction following collisions of oppositely charged ions. Calculated cross sections and final state distributions are compared with experimental data. Theoretical challenges that remain to be solved will be discussed.