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As part of my postdoctoral position at IPN-Orsay, I am mostly involved on the analysis of Jefferson Lab experiments E07-007 and E08-025. These experiments were carried out in Hall A at Jefferson Lab (Virginia, USA) and aim at performing a Rosenbluth separation of the Deeply Virtual Compton Scattering (DVCS) cross section. These data will provide strong constrains for the Generalized Parton Distributions (GPDs) of the nucleon. My contribution to this project so far has been the development of a Geant4 Monte Carlo simulation of the experimental setup in order to compute the acceptance. The setup includes a LH2/LD2 target, an aluminum scattering chamber and a 208-block lead fluoride electromagnetic calorimeter. The full geometry has been already implemented and the simulation has been coupled to a DVCS event generator and the offline reconstruction software. Currently, we are validating the simulation by evaluating the resolution and efficiency of the calorimeter and comparing it the expected and the experimental values.

In addition to this project, I have been involved in the proposal of a new experiment for the upgrade of Jefferson Lab to 12 GeV. This experiment proposes to measure the Timelike Compton Scattering (TCS) process in Hall B and is a complementary way to access GPDs in the nucleon. This experiment will be proposed to the Jefferson Lab Program Advisory Committee (PAC) in late June 2012. In this proposal I have worked on simulation of events, using theoretical cross sections. This simulation then was used for rate estimation in the final state. I also have involved in studies of representation of the observable called ratio “R” for different theoretical predictions. This ratio “R” is an observable which measures the relative contribution of TCS process to cross section of the photoproduction of heavy lepton pair. I also have involved in studies of extraction of Compton Form Factors (CFF) using the GPD fitter program developed by M. Guidal.