**Full Event Simulation of EP Collisions: Photoproduction in the Sherpa Event Generator**

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*Jefferson Lab e-Ar Scattering Experiment: Summary of Our Journey*

**Abstract:**

 Electron--proton collisions are an important mode for, e.g., determination of parton distribution functions, making it necessary to understand the dynamics and kinematics of these collisions. To achieve highest precision in the different observables it is necessary to develop simulations of these events which leverage the Fixed Order calculations and match them to the parton showers. I will review the status of the simulation of high-virtuality DIS production modes in the event generator community and make the case for a simulation of the complementary photoproduction modes. The latter mode will allow for an understanding of the full dynamics of the system and solve the problem of the different scales. I will present the current status of photoproduction at NLO accuracy in the Sherpa event generator and discuss how to merge the two modes to arrive at a complete picture of electron--proton collision in the future. Furthermore, I will review different empirical models which should close the gap from the perturbative to the non-perturbative regime in ep-collisions.

Wednesday, Aril 5thth @ 11 AM – 12 PM

CEBAF Center Auditorium

[**Zoom Link Here**](https://jlab-org.zoomgov.com/j/1600656386?pwd=L2NYbWlITkZzSjc4NGl0eXFsTURLdz09)

**Upcoming Seminar:** *April 15 : Prof Yuri Efremenko - COHERENT neutrino program at the ORNL Spallation Neutron Source (SNS)*