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Statement of Research Interest

My research at JLab focused on two areas, preparing the BigBite spectrometer(BBS) and analyzing HRS data. In order to prepare the BBS, I refurbished the Cerenkov by replacing broken PMTs, realigning internal mirrors, and repairing leaks. By performing maintenance on the VDCs with conditioning the field and signal wires and flushing and replacing the gas, I return the VDCs to working order. I prepared the electronics of the BBS by laying power and signal cables. As part of the preparation, I design logical and efficient cable layouts for building triggers and data storage. My analysis of the HRS data started with building and maintaining the replay script and repository for replay and detector database. I calibrate the ADCs and TDCs from the HRS detectors to provide useful information from the detector signals. Then, I calculated the detector efficiencies and measured the PID efficiency of the calorimeters and Cerenkov. A clean sample of DIS electrons was counted by removing the background events with corrections for pions, positron contamination, and end cap contamination. Then I extracting the cross-section via the Monte-Carlo ratio method. Using the cross-section of Helium, Tritium, and deuterium, I calculated the EMC effect for both Helium and Tritium.

My time at Jefferson Lab has taught many many aspects of the process of inclusive cross-section measurement from electron scattering. I want to take this knowledge and advance my understanding of not only inclusive electron scattering but also other scattering processes, like semi-inclusive or exclusive scattering process and parity-violating reactions. I want to use the tools that I have learned here to develop a more complete interpretation of the structure and interactions of the fundamental aspects of nature. I also want to use my skills with hardware to efficiently and logically develop new and improved tools to study the building blocks of nature.