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Radiation Damage Recovery of $PbWO_4$ Crystals with Optical Bleaching SEAN OH, University of Connecticut — Deeply Virtual Compton Scattering (DVCS) is the easiest way to study Generalized Parton Distributions, revealing correlations between spatial and momentum distributions of partons within a nucleon. An electromagnetic calorimeter is currently being designed for DVCS experiments in Hall C at Jefferson Lab in Virginia, USA. The calorimeter will consist of an array of 1080 $PbWO_4$ crystals. $PbWO_4$ crystals, known to be radiation-hard with good light yield, still undergo damage during radiation exposure; the crystal's light transmittance is reduced as a result, consequently lowering the energy resolution of the calorimeter. However, the radiation damage can be recovered by injecting blue light into the $PbWO_4$ crystal, a method known as optical bleaching. The calorimeter will adopt this method to endure a high radiation environment in Hall C using crystal optical fibers and blue LEDs, which will also be used for detector calibration. I will present the performance of the optical bleaching system for the electromagnetic calorimeter, as well as the extent of radiation damage sustained by the optical fibers and LEDs. This work was conducted at the Institut de Physique Nucleaire d'Orsay, France during summer 2019 and supported by the National Science Foundation IRES Award No. 1658713.

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