

Abstract Submitted
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Conceptual Design Calculations for the Neutral Pion Hadron Calorimeter (JLab Hall C 12 GeV)¹ YEKATERINA GILBO², Student Intern

— The neutral pion's properties and the additional strange quark in the kaon are opportune to study the proton's substructure through General Parton Distributions (GPDs), which describe the movements, placements, and momenta of the quarks inside the proton. In pion or kaon electroproduction a neutral pion or kaon is produced. The neutral pion has a short mean lifetime and decays into two real photons. To study the structure of the proton, we have to analyze the neutral pion and the kaon and their decay products, and thus need dedicated detectors. For the neutral pion, a hadronic calorimeter can be placed in the decay photons' trajectory. For the kaon reaction, the most efficient detection method is an aerogel Cerenkov detector. Both cases rely on detector performance, and thus it is important to evaluate the conceptual design and all components of the detector carefully. In this presentation I will present results of conceptual design studies for the p^0 hadron calorimeter and of a new method based on biological techniques to evaluate the aerogel material index of refraction for the kaon detector.

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²Junior in High School

Yekaterina Gilbo
Student Intern

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