

Abstract Submitted
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Simulation of the CLAS12 Forward Electromagnetic Calorimeter C.J. MUSALO, G.P. GILFOYLE, J. CARBONNEAU, University of Richmond, CLAS COLLABORATION — The primary mission of Jefferson Lab (JLab) is to reveal the quark and gluon structure of nucleons and nuclei and to deepen our understanding of matter and quark confinement. At JLab there is a need for high-performance computing for data analysis and simulations. The precision of many future experiments will be limited by systematic uncertainties and not statistical ones; making accurate simulations vital. A physics-based simulation of a new detector (CLAS12) is currently being developed called gemc. This new program uses the package Geant4 to calculate the interactions of particles with matter in the components of CLAS12. We have added the electromagnetic calorimeter (EC) detector to the gemc simulation. The EC is a sampling electromagnetic calorimeter made up of alternating layers of lead and plastic scintillator used to detect electrons, photons, and neutrons. The mathematical model of the EC geometry was streamlined to make the code more robust. This geometry is stored in a mysql database on a server at JLab and it was modified using Perl scripts. The new geometry was tested by sending straight tracks (no magnetic field) through the edges of specific layers using the geantino, a Geant4 virtual particle that does not interact with materials. Work supported by US Department of Energy contract DE-FG02-96ER40980.

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