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## The CLAS12 Detector









The primary goal of experiments using the CLAS12 detector at energies up to 11 GeV is the study of internal nucleon dynamics using Deeply Virtual Exclusive Reactions.

The separation of single highenergy photons from the photons of  $\pi^0$  decay is very important to the deeply virtual Compton scattering (DVCS) experiments that represents a major physics program planned for CLAS12.





Simulations have shown that the existing electromagnetic calorimeter of CLAS will not be able to absorb the full energy of the electromagnetic showers produced by electrons and photons with momenta above 5 GeV. To reconstruct the energy of highenergy showering particles and to separate high energy  $\pi^0 s$  and photons, a pre-shower calorimeter (PCAL), with finer granularity, is in construction and will be installed in front of the current EC.

The CLAS12 detector package will include the existing electromagnetic calorimeters of the CLAS detector. Calorimeters in the CLAS12 will be used primarily for

identification

of electrons,

photons,  $\pi^0 \rightarrow \gamma \gamma$ 

and neutrons.







![](_page_0_Figure_15.jpeg)

layers

![](_page_0_Figure_16.jpeg)

strips

0	2	4	6	8	10	12	14
π <sup>0</sup> momentum (GeV/c)							

## Stacking PCal modules

![](_page_0_Picture_19.jpeg)

energies.

Pre-shower Calorimeter will be placed in front of the EC and will cover the entire active area.

Light from scintillator strips will be transported to a photodetector via wavelength shifting fibers embedded inside halls along the scintillator strips.

![](_page_0_Picture_23.jpeg)

![](_page_0_Picture_24.jpeg)

Installing lead sheets.

![](_page_0_Picture_26.jpeg)

Fly cutter making milling pass.

Installing PMT in PMT housing.

![](_page_0_Figure_33.jpeg)

## Testing PCal modules with cosmic muons, MIP

![](_page_0_Figure_35.jpeg)

![](_page_0_Picture_36.jpeg)