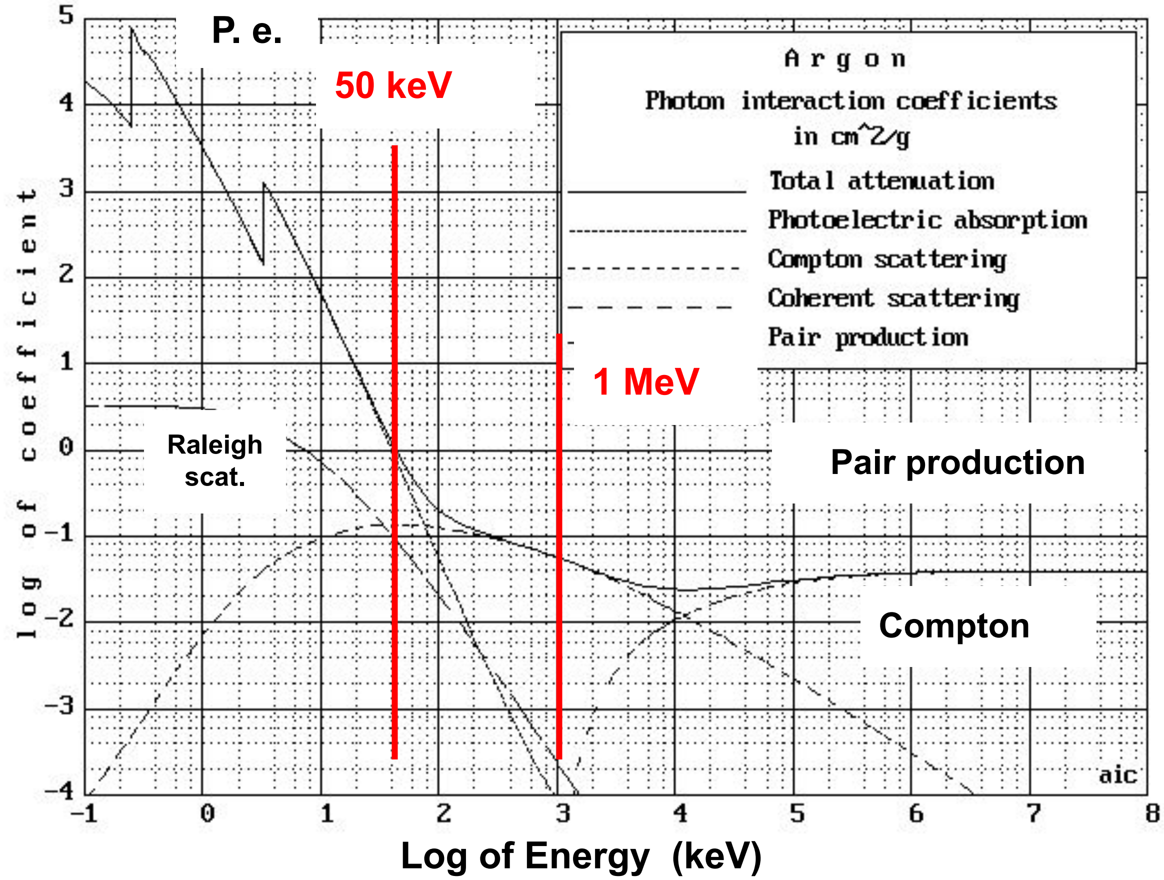
Photon Propagation in Argon Gas



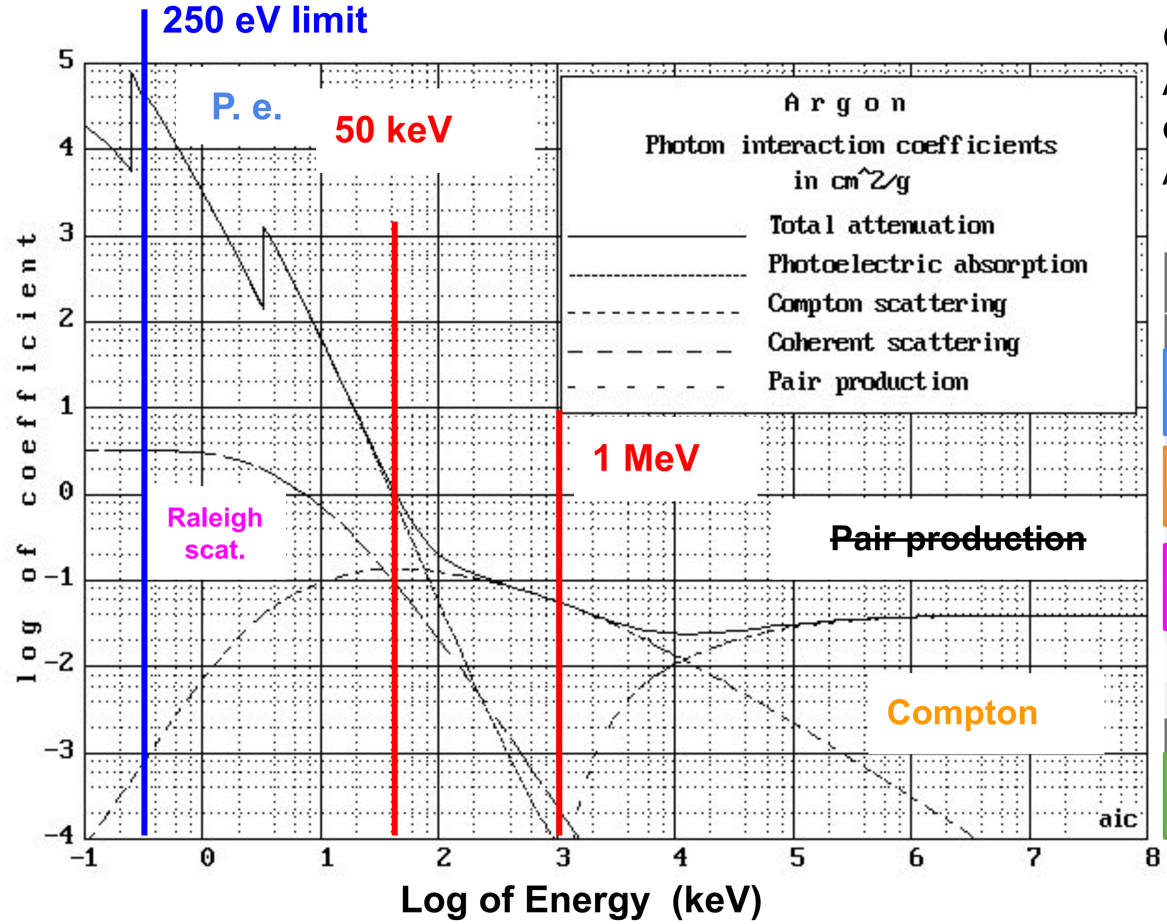
Gas Volume within GEM tracker (3mm):

Ar (80%) + CO2 (20%) mixture

or

Ar (70%) + CO2 (30%) mixture

Photon Propagation in Argon Gas



Gas Volume within GEM tracker (3mm):

Ar (80%) + CO_2 (20%) mixture

or

Ar (70%) + CO_2 (30%) mixture

Process class	Model class	Recommended lo model (*)
G4PhotoElectricEffect	G4LivermorePhotoElectricModel	250 eV
G4PhotoElectricEffect	G4LivermorePolarizedPhotoElectricModel	250 eV
G4ComptonScattering	G4LivermoreComptonModel	250 eV
G4ComptonScattering	G4LivermorePolarizedComptonModel	250 eV
G4RayleighScattering	G4LivermoreRayleighModel	250 eV
G4RayleighScattering	G4LivermorePolarizedRayleighModel	250 eV
G4GammaConversion	G4LivermoreGammaConversionModel	1.022 MeV
G4GammaConversion	G4LivermorePolarizedGammaConversionModel	1.022 MeV
G4eIonisation	G4LivermoreIonisationModel	10 eV
G4eBremsstrahlung	G4LivermoreBremsstrahlungModel	10 eV

Also needed

```cpp
#ifndef remollPhysicsList_h
#define remollPhysicsList_h 1

#include "G4VModularPhysicsList.hh"
#include "G4GenericMessenger.hh"

class G4VPhysicsConstructor;

class remollPhysicsList: public G4VModularPhysicsList
{
  public:
    remollPhysicsList();
    virtual ~remollPhysicsList();

  public:
    // Set verbose level
    void SetVerboseLevel(G4int level);

    // Set Parallel physics
    void SetParallelPhysics(G4bool flag);
    // Enable Parallel physics
    void EnableParallelPhysics();
    // Disable Parallel physics
    void DisableParallelPhysics();

    // Set optical physics
    void SetOpticalPhysics(G4bool flag);
    // Enable optical physics
    void EnableOpticalPhysics();
    // Disable optical physics
    void DisableOpticalPhysics();

    // Set step limiter physics
    void SetStepLimiterPhysics(G4bool flag);
    // Enable step limiter physics
    void EnableStepLimiterPhysics();
    // Disable step limiter physics
    void DisableStepLimiterPhysics();

    // Handle reference physics lists in messenger
    void ListReferencePhysLists();
    void RemoveReferencePhysList();
    void RegisterReferencePhysList(G4String name);
```

Moller Hardware

- **Reinspection**
- **GEM material didn’t arrive**

physics

MDPI

Article

u-Channel Color Transparency Observables

Garth M. Huber [1], Wenliang B. Li [2,3,*], Wim Cosyn [4,5] and Bernard Pire [6]

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Abstract: The paper proposes to study the onset of color transparency in hard exclusive reactions in the backward regime. Guided by the encouraging Jefferson Laboratory (JLab) results on backward π and ω electroproduction data at moderate virtuality Q^2, which may be interpreted as the signal of an early scaling regime, where the scattering amplitude factorizes in a hard coefficient function convoluted with nucleon to meson transition distribution amplitudes, the study shows that investigations of these channels on nuclear targets opens a new opportunity to test the appearance of nuclear color transparency for a fast-moving nucleon.

Keywords: color transparency; u-Channel meson production; colinear factorization

1. Introduction

Although a fundamental prediction of quantum chromodynamics (QCD) [1,2], the phenomenon of color transparency (CT) has been, for many decades, a domain of controversial interpretations of experimental data; for a review, see, e.g., [3]. Together with scaling laws and polarization tests, the increase in nuclear transparency (NT) ratio with the relevant hard scale (denoted as Q^2) is believed to constitute an important signal of the onset of a collinear QCD factorization regime where hadrons transverse sizes shrink proportionally to $1/Q$, thus drastically diminishing final-state interaction cross-sections.

Near forward exclusive photon or meson electroproduction processes have been the subject of intense theoretical and experimental studies [4,5]. Most of the available data are now interpreted in terms of a collinear QCD factorized amplitude, where generalized parton distributions (GPDs) are the relevant hadronic matrix elements. The study of nuclear transparency for meson electroproduction [6,7] indeed revealed a growth of the NT ratio indicative of an early on-set of the scaling regime. This may, however, look contradictory to the non-dominance of the leading twist pion production amplitude revealed by the small value of the virtual photon's longitudinal-to-transverse structure function ratio, σ_L/σ_T, for

check for updates

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Deep Learning-based Muon Identification for the ECCE Detector

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