Contribution ID: **143** Type: **Contributed talk**

A feasibility study for the dark photon search at the BGOOD experiment

Monday, 8 July 2024 15:20 (20 minutes)

Investigating the potential feeble interaction between particles in the Standard Model (SM) and the Dark Sector (DS) is a significant frontier in particle physics. One possible manifestation of this feeble interaction is the dark photon, theorized as a vector gauge mediator that interacts very weakly with SM fermions.

The BGOOD photoproduction experiment combines a central electromagnetic calorimeter with a forward spectrometer for charged particle detection. This configuration enables the complete detection of reaction final states such as $\pi^0 p$, ηp, and $2\pi^0 p$. These are well-suited channels for the study of the mass resolution with regard to the dark photon search. The missing mass of the photons from η decay were used to determine the mass resolution of the detector. Kinematic fitting techniques are also used to enhance the mass resolution, a critical element for accurate particle identification in high-energy experiments.

Supported by DFG projects 388979758/405882627 and the European Union's Horizon 2020 programme, grant 824093.

session

K. Precision and New Physics

Primary author: HAJDINI, Vlera (University of Bonn)

Presenter: HAJDINI, Vlera (University of Bonn)

Session Classification: K. Precision and New Physics