

# A proposed PKU-Muon experiment for muon tomography and dark matter search

*Thursday 18 July 2024 20:40 (20 minutes)*

We propose here a set of new methods to directly detect light mass DM through its scattering with abundant atmospheric muons or accelerator beams. Firstly, we plan to use the free cosmic muons interacting with dark matter in a volume surrounded by tracking detectors, to trace possible interaction between dark matter and muons. Secondly, we will interface our device with domestic or international muon beams. Due to much larger muon intensity and focused beam, we anticipate the detector can be made further compact and the resulting sensitivity on dark matter searches will be improved. In line with above projects, we will develop muon tomography methods. Furthermore, we will measure precisely directional distributions of cosmic muons, either at mountain or sea levels, and the differences may reveal possible information of dark matter distributed near the earth. In the future, we may also extend our study to muon on target experiments.

## Alternate track

1. Astro-particle Physics and Cosmology

## I read the instructions above

Yes

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**Session Classification:** Poster Session 1

**Track Classification:** 09. Dark Matter Detection