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Dark SHINE — Search for Light Dark Matter at the SHINE facility in Shanghai

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Dark SHINE is a fixed-target experiment initiative at SHINE (Shanghai high repetition rate XFEL and extreme light facility, being the 1st hard X-ray FEL in China) under construction targeting completion in 2026. Dark SHINE aims to search for the new mediator, Dark Photon, bridging the Dark sector and the ordinary matter. In this work and presentation, we present the idea of this new project and 1st prospective study in search for Dark Photon decaying into light dark matter. It also provides the opportunity to incorporate broader scope of BSM search ideas utilizing the fixed-target experiment of this type.

Reference:

Sci. China-Phys. Mech. Astron., 66(1): 211062 (2023), DOI:10.1007/s11433-022-1983-8

arXiv:2311.01780

arXiv:2310.13926

arXiv:2401.15477

DOI:10.5281/zenodo.8373963

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