Photoproduction of dark particles off electrons in the Compton process [1] SANKHA S. CHAKRABARTY, IGAL JAEGLE, University of Florida at Gainesville — We propose a novel way to search for the dark photon (A'), the axion-like pseudo-scalar (a), the dark scalar (ϕ), and the light dark matter (χ) in the Compton process, $\gamma+e^- \to A'/a/\phi+e^-$ with $A'/a/\phi$ decaying into leptons, photons, or χ's (when permitted) for the mass ranges of $1 \leq m_{A'/a/\phi} \leq 100$ MeV/c^2 and $0.5 \leq m_\chi \leq 50$ MeV/c^2, respectively. We will review how past, current, and future experiments (beam-dump and fixed target using a lepton, hadron, or photon beam) can use this new production mechanism of dark particles. We will discuss the expected sensitivities of these experiments on the kinetic mixing (ϵ), the axion-like pseudo-scalar coupling to electron (g_{ae}), and the dark scalar coupling to electron (y_e).

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References

[1] Chakrabarty, Sankha S. and Jaegle, Igal, Photoproduction of dark particles off electrons in the Compton process, arxiv:1810.XXXXX