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# Effects of a hidden photon-dark matter background in axion-photon interactions

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In this work we investigate a scenario where the dark matter of the universe is made of light hidden photons. Thanks to a $Z_2$ symmetry, the kinetic mixing with the photon is forbidden and the dark photon interacts with the Standard Model only via an axion-like particle, that acts as a messenger. Focusing on signatures involving the ordinary photon, our survey of the phenomenology includes limits from cosmological stability, CMB distortions, astrophysical energy loss, light-shining-through-walls experiments, helioscopes and solar X-ray observations.

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