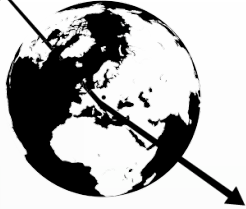


IDM 2022



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Identification of Dark Matter

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BROADBAND SEARCH FOR HIDDEN PHOTON DARK MATTER USING A CRYOGENIC DISH AND KINETIC INDUCTANCE PARAMETRIC AMPLIFIER

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Poster # 119



- Search for wavelike hidden photon (HP) dark matter at the $O(10) \text{ ueV}c^{-2}$ scale.
- Cryogenic emitter-receiver-amplifier setup \rightarrow metallic dish focuses DM conversion photons, from HP “kinetic mixing” with electromagnetism, to horn antenna coupled to Kinetic Inductance Parametric Amplifier (KIPA)
- KIPAs are state of the art devices
 - 20 dB gain across an octave of bandwidth
 - Demonstrated Standard Quantum Limit (1 photon) of added noise
- Set limits on new HP kinetic mixing parameters space for 20-30 $\text{ueV}c^{-2}$ mass