

Resonant and broadband haloscope searches for hidden photon dark matter using the HERA resonant cavity at frequencies below 500 MHz

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The microwave cavity experiment WISPDMM is a haloscope type experiment sensitive to hidden photon and possible light dark matter candidates in a wide mass range below $2\ \mu\text{eV}$. The flexible broad-band read-out of WISPDMM provides simultaneous sensitivity to multiple resonant modes as well as to off-resonant frequencies corresponding to particle masses as low as $\sim 10^{-12}\ \text{eV}$. After completing the construction of a fully tunable WISPDMM setup, the first science run was carried out from 23rd October 2017 to 2nd November 2017 and accumulated a total acquisition time of 61.1 hours with the lowest detectable power of $\sim 10^{-18}\ \text{Watt}$ and sensitivity of $\chi \sim 10^{-14}$ to kinetic mixing of hidden photon dark matter. In this talk, we will present the general developments and the first results from WISPDMM.

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