

The ORGAN Experiment: Phase 1 results

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The ORGAN (Oscillating Resonant Group AxioN) experiment in Perth, Australia is a microwave cavity axion haloscope that aims to search for axion dark matter particles within the mass range of 50 to 200 μeV predicted by the standard model axion seesaw Higgs portal inflation (SMASH) model. The experiment's initial phase 1a scan sets an upper limit on the coupling of the axion to two photons of $g_{a\gamma\gamma} \geq 3 \times 10^{-12} \text{ GeV}^{-1}$ over the mass range between 63.2 – 67.1 μeV with a 95% confidence interval. This highly sensitive result is sufficient to exclude the well-motivated axion-like particle (ALP)ogenesis model for dark matter in the searched region. We also present the most recent results from the phase 1b search, which excludes the ALP cogenesis model between 107.4 – 111.9 μeV .

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