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The ORGAN Experiment: Current Status, and Future Plans

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We present the current status, and future plans of The Oscillating Resonant Group AxioN (ORGAN) Experiment, a high-mass ($\sim 60\text{--}200$ μeV) microwave cavity axion haloscope hosted at the University of Western Australia. ORGAN comprises various phases and sub-phases, having commenced in 2021, and running until 2026. We will discuss each phase, their experimental details, and projected reach. We will report the results of Phase 1a, which commenced in 2021, and the status of phase 1b, which will commence in late 2021/early 2022. Initial phases rely on traditional tuning-rod resonators, and HEMT amplifiers. Future phases project the use of novel resonant designs based on dielectric structures, and advanced readout techniques based on GHz single photon counters (SPCs). We will discuss the proposed resonant designs, and report on progress in the development of SPCs. It is projected that, with the development of efficient SPCs, within the 12+ Tesla, milli-Kelvin environment of ORGAN, DFSZ sensitivity is attainable over the entire mass range within the time-scale of the experiment.

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