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First results from a microwave cavity axion search at 25 μeV**: Analysis**[1] LING ZHONG, Yale University, ADMX-HF COLLABORATION — ADMX-HF searches for dark matter axions via Primakoff conversion into microwave photons in the gigahertz domain. Since 2012, tremendous effort has been made to build an axion detector working in this frequency range. By operating the system in a cryogen-free dilution refrigerator ($T = 127\,\mathrm{mK}$) and integrating a Josephson Parametric Amplifier (JPA), we obtain a sufficiently low system noise temperature to exclude axion models with $g_{a\gamma\gamma} > 2 \times 10^{-14}\,\mathrm{GeV}^{-1}$ over the mass range $23.55\ \mu\mathrm{eV} < \mathrm{m_a} < 24.0\ \mu\mathrm{eV}$. In this talk, I will discuss the statistical nature of the data, simulations, and the detailed data analysis procedure we used to optimize the sensitivity to axion signals.

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