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Search for Axion Dark Matter in a Mass Range of 6.62 to 7.04 μeV with a Tunable Microwave Resonant Cavity

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Since P. Sikivie had introduced an experimental technique for detection of the axion dark matter with a microwave resonant cavity, a number of experiments have attempted to search for it using this haloscope technique in various mass ranges, but no axion signal has been seen so far. Although those excluded mass regions with certain sensitivities in terms of axion-photon coupling constant ($g_{a\gamma\gamma}$), broad mass regions still need to be explored with a good sensitivity. To unveil one of those regions, a yet another attempt to search a mass range of 6.62 to 7.04 μeV is being made at IBS/CAPP employing a new locomotive frequency tuning mechanism. The experiment aims the most sensitive axion dark matter search in this axion mass range, where the sensitivity could reach the QCD axion band. In this presentation, the configurations and technical details of the experiment are discussed.

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