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GrAHal-CAPP for axion dark matter search with unprecedented sensitivity in the 1-3 micro-eV mass range

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A collaboration between CNRS-Grenoble and IBS-CAPP Daejeon plans to build a Sikivie's type haloscope for axion/ALPs dark matter search at the Dine-Fischler-Srednicki-Zhitnitskii (DFSZ) sensitivity for the 300-600 MHz range. It will be based on the large bore superconducting magnet of LNCMI Grenoble providing a central magnetic field up to 9 T in 810 mm warm bore diameter. This magnet has been successfully powered up to 8.5 T achieving the first steps of the electrical commissioning phase. The design principles of the cryostat with its double dilution refrigerators to cooldown below 50 mK, the light Cu RF-cavity of 700 mm diameter together with its tuning rod(s) and first stages of the measurement chain, are presented. Perspectives for the targeted sensitivity assuming less than 2-year integration time is given.

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