

The CAST-CAPP/IBS Detector Project: Progress and Challenges

Friday 24 June 2016 08:55 (20 minutes)

The CAST-CAPP/IBS Detector, a joint effort between the CERN Axion Solar Telescope (CAST) collaboration [1] and the Center for Axion and Precision Physics Research (CAPP/IBS) [2], has made considerable progress towards the design and initial installation of rectangular RF cavities inside the bore of the 9T CAST dipole magnet. The final goal of this project, currently in an R&D stage, is a haloscope search [3] for cold dark matter axions in the ~ 21 to $25 \mu\text{eV}$ mass range (~ 5 to 6 GHz).

While a limited, exploratory installation is scheduled for mid June 2016, many challenges and uncertainties remain. These uncertainties come from timely completion of the integration into the CAST magnet; timely delivery of rectangular cavities; the sheer ability of properly placing and cooling cavities inside the magnet cold bores, while being able to recover them; the presence of mechanical instabilities; the proper placement and configuration of low temperature electronics in a partially unknown environment; etc.

This installation is thus not guaranteed to be on time for this workshop. Nevertheless we would like to present the progress that has occurred in cavity design and fabrication, in the development of tuning schemes, in the integration of the project into the CAST magnet, and more.

[1] CAST Collaboration, K. Zioutas et al., *Phy. Rev. Lett.* 94 (2005) 121301.

[2] http://capp.ibs.re.kr/html/capp_en/

[3] P. Sikivie, *Phys. Rev. Lett.* 51, 1415 (1983).

Primary author: Dr MICELI, Lino (IBS Center for Axion and Precision Physics)

Presenter: Dr MICELI, Lino (IBS Center for Axion and Precision Physics)