

Axion search and research with low background Micromegas

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Helioscopes are one of the most promising techniques for axion discovery in which low background x-ray detectors are mandatory. We report the latest developments of the Micromegas detectors for the CERN Axion Solar Telescope (CAST). The use of low background techniques has led to background levels below 10^{-6} counts/keV/cm²/s, more than a factor 100 lower than the first generation of Micromegas detectors at CAST. The helioscope technique can be enhanced by the use of an x-ray focusing device, increasing the signal-to-background ratio. A new dedicated x-ray optic was installed at CAST during 2014 with a low background Micromegas in its focal plane. On top of increasing CAST's sensitivity, the system has been conceived as a technological pathfinder for the International Axion Observatory IAXO.

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