## Axion emissivity from photon conversions in the solar magnetic field

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Axions can be produced in the Sun via the Primakoff process leading to conversions of thermal photons into axions in the flucutuating electric and magnetic fields generated by the charged particles in the stellar plasmas. Currently this flux is searched by the helioscope experiment CAST at CERN. A future generation helioscope experiment, called IAXO, is currently under investigation.

Seismic solar models also predict magnetic fields inside the Sun in the radiative and convective zones. The intensity of these fields may also reach  $B \sim 3 \times 10^3 T$ . At this regard the purpose of our thesis is to characterize the solar axion flux coming from photon conversions into the large-scale solar magnetic fields. We will compare this flux with the Primakoff one and investigate the detection possibility of this additional contribution of the solar axion flux in IAXO detector.

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