



Contribution ID: 66

Type: **not specified**

## Axions as solar thermometers

The upcoming helioscope experiment IAXO is sensitive to realistic QCD axion models, making it one of the most exciting future axion searches. Indeed, in case of a discovery, IAXO may even determine the axion mass in the multi-meV range and allow us to study solar metallicities, magnetic fields, and distinguish different solar or axion models.

This talk further explores that scenario. In particular, I will show how the helioscope's solar "axion image" can be inverted to infer the solar temperature and Debye scale at different points inside the entire Sun. Apart from laying out the necessary computational steps, I will explicitly demonstrate the viability of this approach for IAXO and comment on the relationship of our method with similar techniques, neutrino observatories, and related efforts within my MSCA fellowship "AxiTools."

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**Session Classification:** Poster Session