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Calculation of the solar axion flux and the KSVZ axion model landscape

Tuesday 21 September 2021 11:00 (15 minutes)

The calculation of the solar axion flux has recently generated much attention, and it has been realised that axions can be powerful tools for studying solar metal abundances and magnetic fields.

The feasibility of such studies depends on our ability to accurately predict the solar axion flux. In this talk, I will present an overview of solar models and opacity codes and summarise the statistical and systematic uncertainties of the solar axion flux calculation from Primakoff, ABC, and plasmon interactions. I will discuss how previous calculations can be improved further e.g. by including electron degeneracy effects.

As a direct application, IAXO's ability to distinguish KSVZ axion benchmark models its prospects to tackle the solar abundance problem will be discussed. I will also comment on the broader landscape of KSVZ models and our recent efforts to catalogue them.

Do you wish to attend the workshop on-site?

yes

Summary

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