

Solar models, neutrinos, and composition

Thursday 17 March 2016 11:45 (25 minutes)

Standard solar models (SSMs) provide a reference framework across a number of research fields: solar and stellar models, solar neutrinos, particle physics the most conspicuous among them. The accuracy of the physical description of the global properties of the Sun that SSMs provide has been challenged in the last decade by a number of developments in stellar spectroscopic techniques. Over the same period of time, solar neutrino experiments, and Borexino in particular, have measured the four solar neutrino fluxes from the pp-chains that are associated with 99% of the nuclear energy generated in the Sun. Borexino has also set the most stringent limit on CNO energy generation, only $\sim 40\%$ larger than predicted by SSMs. More recently, and for the first time, radiative opacity experiments have been performed at conditions that closely resemble those at the base of the solar convective envelope. In this article, we review these developments and discuss the current status of SSMs, including its intrinsic limitations.

Primary author: Dr SERENELLI, Aldo (Instituto de Ciencias del Espacio (ICE/CSIC - IEEC))

Presenter: Dr SERENELLI, Aldo (Instituto de Ciencias del Espacio (ICE/CSIC - IEEC))

Session Classification: Talks

Track Classification: Neutrino Physics