

Solar models and neutrinos - Where do we stand?

Tuesday, 3 July 2018 14:00 (30 minutes)

In this talk I will present an overview on the current status of solar modeling and neutrinos from the perspective of a stellar astrophysicist. The fundamental problem in solar models still is the uncertainty related to the true solar composition and the radiative opacity in the solar interior. A combination of both determines the rate of energy transport in the Sun, and thus its thermal structure. New semi-empirical determinations of the solar opacity profile, using helioseismology and solar neutrinos, point either to a high-metallicity Sun or to a missing opacity source in current atomic opacity calculations. New opacity calculations only seem to make the problem worse, as shown by using experimental results for ^8B and ^7Be neutrinos. This uncertainty is ever more important in the so-called era of precision stellar physics, powered by the development of asteroseismology, because it poses a fundamental problem for stellar physics. At the end of the talk, the fundamental relevance of measuring CN-neutrinos as a tiebreaker will be emphasized strongly.

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