

HAW09-2009-000642

Abstract for an Invited Paper
for the HAW09 Meeting of
the American Physical Society

Standard Solar Model Data Needs¹

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The progresses in the solar neutrino experiments and the more precise determination of neutrino mass parameters by means of reactor neutrino experiment allow for the possibility to exploiting neutrinos to study the solar interior. Therefore, it will be possible to check the solar model and, more in general, to better understand the evolution of low mass stars. To reach this ambitious result it is of fundamental importance to reduce the uncertainties in solar model physics inputs. In the centre of the sun hydrogen burning is taking place, the transformation of four protons in a helium nucleus is the basic mechanism by which the Sun replaces the energy lost from the surface (which amounts to $3.82 \cdot 10^{33}$ erg s⁻¹). During this transformation two positrons and two neutrinos are emitted for each yielded helium nucleus. The sun is burning hydrogen mostly by means of p-p chain, the accurate knowledge of the rate of p-p chain and CNO cycle reactions at the relevant solar energy is a fundamental ingredient in the analysis of the solar neutrino experiments. In the talk I will report on the present experimental knowledge of the p-p chain and CNO cycle cross sections and how these uncertainties influence of the uncertainty the solar neutrino flux determinations.

¹Supported by JINA