Contribution ID: **100** Type: **Contributed talk**

Recent Solar neutrino Results from Super-Kamiokande

Wednesday 26 July 2017 15:30 (15 minutes)

Super-Kamiokande (SK), a 50 kton water Cherenkov detector in Japan, is observing neutrinos and searching for proton decay and dark matter decays. The installation of new front-end electronics in 2008 marks the beginning of the 4th phase of SK (SK-IV). With the improvement of the water circulation system, calibration methods, reduction cuts, this phase achieved the lowest energy threshold thus far: 3.5 MeV kinetic energy.

SK studies the effects of both the solar and terrestrial matter density on neutrino oscillations: a distortion of the solar neutrino energy spectrum would be caused by the edge of the Mikheyev-Smirnov-Wolfenstein resonance in the solar core, and terrestrial matter effects would induce a day/night solar neutrino flux asymmetry. A global oscillation analysis using SK-I,II,III, and SK-IV data and combined with the results of other solar neutrino experiments as well as KamLAND reactor experiment has been carried out. The results of this global analysis will be presented as well. SK observed solar neutrino interactions for more than 20 years. This long operation covers about ˜2 solar activity cycles. An analysis about a possible correlation between solar neutrino flux and 11 year activity cycle will be presented.

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Session Classification: Neutrino Parallel

Track Classification: Neutrinos