Neutrino Oscillations: Atmospheric and Solar

Monday 27 July 2009 14:30 (25 minutes)

In contrast to the predictions of the Standard Model of particle physics, experimental data now indicate that neutrinos are massive and undergo flavor oscillations. Indeed, the oscillations of ν_e to ν_x within the sun are now the favored explanation for the discrepancy between the Standard Solar Model's electron neutrino flux prediction and the flux measurements of the solar neutrino experiments. Similarly, observations of atmospheric neutrinos have confirmed that ν_{μ} to ν_{τ} oscillations explain the atmospheric neutrino anomaly. These data form an increasingly complete framework of neutrino oscillations and define two oscillation domains driven by largely different frequencies and large mixing angles. Though it remains to be seen whether or not the domains are also connected by the third as yet unmeasured mixing angle, θ_{13} , there are additional open questions that can be addressed by continued study of neutrinos from these natural sources. In this talk I will review the current state of solar and atmospheric neutrino oscillation physics.

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Track Classification: Neutrino Physics