

PHYSICS DEPARTMENT COLLOQUIUM

“FIRST RESULTS FROM THE KAMLAND EXPERIMENT”

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The study of solar and atmospheric neutrinos has led us, in the last decade, to the tentative conclusion that neutrino oscillations do occur in nature. Such oscillations would imply that neutrinos have a finite mass, a fact that is not contemplated by the minimal version of the standard model. Remarkably, all the information on these effect we had till now was based on the observation of neutrinos from extraterrestrial sources, making it difficult to separate neutrino physics from other types of effects.

In the last 10 months a new experiment, KamLAND, has measured anti-neutrinos produced by a large number of nuclear reactors in Japan, with the goal of trying to reproduce the alleged phenomenon of solar neutrino oscillation in what we could call a "laboratory setting" (admittedly with a very large laboratory...). We will report on our first findings, and discuss whether or not our data is consistent with the interpretation that neutrinos have a finite mass.

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