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Séminaire SPP

Lundi 28 février 11h00

CEA-Saclay Bât 141, salle André Berthelot

The Reactor Anti-Neutrino Anomaly

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Recently new reactor antineutrino spectra have been provided for 235U, 239Pu, 241Pu and 238U, increasing the mean flux by about 3 percent. To good approximation, this reevaluation applies to all reactor neutrino experiments. The synthesis of published experiments at reactor-detector distances ≤ 100 m leads to a ratio of observed event rate to predicted rate of 0.979(0.029). With our new flux evaluation, this ratio shifts to 0.937(0.027), leading to a deviation from unity at 98.4% C.L. which we call the reactor antineutrino anomaly. The compatibility of our results with the existence of a fourth non-standard neutrino state driving neutrino oscillations at short distances is discussed. The combined analysis of reactor data, gallium solar neutrino calibration experiments, and MiniBooNE-neutrino data disfavors the no-oscillation hypothesis at 99.93% C.L. The oscillation parameters are such that $|\Delta m^2_{new}| \geq 1.5eV^2$ (99%) and $\sin^2(2\theta_{new}) = 0.17(0.1)$ (95%). Constraints on the theta13 neutrino mixing angle are revised.

Le café sera servi 10 minutes avant.

NB : La présentation d'une pièce d'identité est exigée à l'entrée du centre. Tous les auditeurs extérieurs sont priés de prévenir à l'avance Emilie Chancrin, tél. 01 69 08 23 50, e-mail : `emilie.chancrin@cea.fr`. (U.E. : délai de 24 h, hors U.E. : délai de 4 jours).