



東工大 物理学系「物理学リーダーシップ」

FGIP : Foreign Graduate Student Invitation Program

外国人博士課程大学院生の短期招待・共同研究

FGIP - Student Forum セミナー

Diana Navas Nicolás (CIEMAT, Spain)

日時：2016年11月08日(火) 16:30 - 18:00

場所：本館1階H155B号室

Detection systematic uncertainties in the two detectors phase of the Double Chooz experiment

Abstract:

Being an intense and pure source of low energy electron antineutrinos, nuclear reactors are one of the most powerful tools to investigate neutrino oscillations. The Double Chooz experiment aims for a precise determination of the neutrino mixing angle θ_{13} using a two detector configuration with a liquid scintillator target volume read by photomultipliers. In order to reach this goal, a high and accurately known detection efficiency of the inverse beta decay (IBD) $\nu_e^- + p \rightarrow e^+ + n$ is required. The ν_e^- event signature consists of the coincidence of a prompt positron signal and a delayed neutron capture on Gadolinium (or Hydrogen) in liquid scintillator.

During the period of data taking with only one detector, the mixing angle θ_{13} is estimated from the comparison between data from the far detector and the Monte Carlo simulation of the antineutrino flux. Therefore it is needed to guarantee that the efficiency of both samples are properly determined. Once the near detector is working, the detection efficiency analysis of both detectors becomes into a crucial study to determine the mixing angle, since the detection efficiency systematic uncertainty is the dominant component in the normalization uncertainty affecting the final precision on the θ_{13} measurement.



問い合わせ：久世研究室・シャランコヴァ（内線2722）

FGIP - Guest student の滞在スケジュール

名前	大学・研究機関	滞在期間	受入担当
Diana Navas Nicolás	CIEMAT, Madrid, Spain	10/31 - 11/30	Ralitsa Sharankova