



Laboratório de Instrumentação e
Física Experimental de Partículas

Seminário LIP*

Monday, 18 December 2017

11:30 to 12:30

Measuring the Elusive - New Results from the NOvA Long-Baseline Neutrino Experiment

**By Prof. Bruno Sousa
(University of Cincinnati)**

The weakly-interacting neutrino remains the most elusive and difficult to measure of all elementary particles. Yet, it may hold long-sought answers to some of the most profound questions on our understanding of the evolution of the universe, most prominently: why is the universe matter-dominated? The answer to this question may be crucially linked to parameters in neutrino physics that remain unmeasured. By analyzing the most powerful neutrino beam in operation at two different locations, one close to beam production at Fermilab, and one 810 km downstream in Ash River, Minnesota, the NOvA long-baseline experiment can probe the neutrino parameters by precisely measuring how neutrinos change from one flavor to another. The precision measurement of neutrino oscillations is the focal point of the US experimental high-energy physics program and, as the present flagship experiment at Fermilab, NOvA is in a unique position to produce the next major advances in our understanding of neutrino properties. In this talk, I will review our current knowledge of the neutrino landscape, describe the current status of the NOvA experiment, and present the latest results obtained with three years of data taking, corresponding to an exposure of 9×10^{20} protons-on-target, I will conclude with a discussion of how NOvA and future US neutrino experiments may contribute to solving some of the universe's deepest mysteries.

*** Place: Seminar Room (311)**

LIP (Laboratório de Instrumentação e Física Experimental de Partículas)

Instituto Interdisciplinar de Investigação da Universidade de Lisboa

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Coffe and cakes at 11:00 in room 312