IJCLab
Irène Joliot-Curie
Laboratoire de Physique des 2 Infinis

Physique Nucléaire

Séminaire inter-pôles
intérêt général

A2C
Astroparticles, Astrophysics & Cosmology

Dark Boson:

The messenger of a new interaction

Understanding the composition and functioning of our Universe are among the most fundamental and challenging questions in Physics. To date, the intrinsic nature of dark matter remains a mystery.

This presentation is about the New JEDI project which aims to study through several nuclear physics experiments a fascinating alternative scenario, such as the existence of an indirect interaction between ordinary matter, well described by the Standard Model, and the Darks Sectors of the Universe via portals (so called bosons).

In other words, does a new fifth force of nature exist? For three years now, the collaboration has worked on the construction of a new detection system, named New JEDI. The latter is designed to be versatile in order to make a proposal for a large-scale broadband experimental program.

The project relies on pathfinder experiments conducted at the ARAMIS-SCALP facility (Orsay, France). The commissioning of the New JEDI setup has been completed successfully on June 2021 at a tandetron facility in (Rez, Czech Republic). The first experiment will take place Orsay soon at the ANDROMEDE facility (Orsay, France). We plan to develop a long-term research program in the MeV terra incognita energy range at the new SPIRAL2 facility (Caen, France), that will deliver unique high-intensity beams of light, heavy-ions and neutrons in Europe. The experimental program already endorsed or foreseen in the incoming years will place the New JEDI team in a unique and world leading position to conduct a ground-breaking research in the Dark Sectors field.

The presentation, adapted for the general public, will address the following questions: What is a force? What are the already well-known four forces of nature? What is our Universe made of? How was the dark side of our Universe discovered? What is dark matter made of? Dark Sectors theory: the force from the dark side! Can we check experimentally the existence of this 5th force of the Universe? What is the new JEDI project? What will be measured during the experiment at the ANDROMEDE facility?

par
Beyhan BASTIN
(GANIL)

Lundi 14 février 2022
à 14h

P. Lehmann Auditorium
Bât.200

NEW JEDI
COLLABORATION

université PARIS-SACLAY
Université de Paris
cnrs

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