

Neutrino, a breach in the Standard Model of elementary particles

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After the experimental results showing that the neutrino has a non-zero mass, neutrino physics, complementary to the LHC one, has become a very exciting subject and is undergoing rapid expansion.

The neutrino, the elementary particle the most enigmatic, always reserved some surprises to theorists and experimentalists. Its existence was predicted by W. Pauli in 1930. Because of its very low probability of interaction with matter, the neutrino was first observed only 26 years later. In the first part of this course, a historical review of the physics around the neutrino will be presented. The second part will focus on the relationship between the Standard Model of elementary particles and the neutrino. The formalism of neutrino oscillations, which has undoubtedly proved that neutrinos have mass, will be explained later. In the experimental part, few of the most representative projects on neutrino oscillations and on the direct measurement of the neutrino mass will be presented. The last part will be devoted to new projects proposed for understanding the properties of this particle.

Main topics:

- History of the neutrino
- Standard Model of elementary particles
- Neutrino Oscillations
- Experimental Results
- Future Projects

Time:

18/01, 19/01, 20/01, from 10:00 to 12:00.

18/01, 19/02, from 14:00 to 16:00.

Place:

Salle de visio P. Mondrian de l'IPHC, bat. 25, 23 rue du Loess, 67034 Strasbourg