ID de Contribution: **276** Type: **Non spécifié**

Status and prospects of JUNO

lundi 17 novembre 2025 10:20 (25 minutes)

The Jiangmen Underground Neutrino Observatory (JUNO) is a 20-kiloton multipurpose liquid scintillator detector located in Guangdong province, China, designed to address key open questions in neutrino physics. After completing construction in 2024, JUNO entered a commissioning phase with water filling, followed by a six-month liquid scintillator filling campaign. Full data-taking is expected to begin around September 2025.
The detector is situated at an optimized baseline of about 52.5 km from both the Yangjiang and Taishan Nuclear Power Plants, which together provide a high flux of reactor antineutrinos. This location maximizes sensitivity to JUNO's primary goal: determining the neutrino mass ordering (NMO). By precisely measuring oscillation-induced modulations in the energy spectrum, JUNO aims to determine the NMO with a significance of about 3σ in roughly seven years. Its large target mass, low background, and unprecedented 3% energy resolution at 1 MeV will also enable sub-percent precision measurements of the oscillation parameters Δm^{2}*{21}, sin^{2}(2θ){12}, and Δm^{2}*{31} simultaneously.
Beyond reactor antineutrino measurement, JUNO has a broad physics program, including the detection of neutrinos from natural sources such as the Sun, the Earth, the atmosphere, and potential galactic core-collapse supernovae.
This talk will present an overview of JUNO's design and detection principles, highlight its primary and complementary scientific goals, and discuss its prospects for its contributions to neutrino physics in the coming decade.

Auteur: PELICCI, Luca (Università degli Studi di Milano and INFN Milano)

Orateur: PELICCI, Luca (Università degli Studi di Milano and INFN Milano)