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PILAR HERNÁNDEZ

Universitat de València / IFIC / CERN

Born in Gijón, Pilar Hernández graduated in Physics from the Universidad Autónoma de Madrid in 1990 and received her PhD from the same university in 1993. She was a Junior Fellow of the Harvard Society of Fellows at Harvard University from 1993 to 1996, and subsequently worked as a Fellow and Staff at the Theory Division of CERN in Geneva. Since 2008 she is Professor of Theoretical Physics at the Universitat de València and carries out her research at the Institute of Corpuscular Physics, a joint centre of the Spanish National Research Council (CSIC) and the Universitat de València (UV).

An expert in fundamental particle physics, her research aims to understand the most intriguing aspects of the standard particle model, such as why elementary particles appear repeated in three families with such a picturesque mass pattern, or why their interactions violate parity and, much more subtly, the symmetry between matter and antimatter. The answer to these questions may hold the key to understanding the universe: what the dark energy and dark matter that dominate its expansion is made of, or why in the cold universe we inhabit there is a remnant of the Big Bang in the form of the ordinary matter we are made of. Among her most renowned work is the proposal to measure in the future the asymmetry in the oscillations of neutrinos and antineutrinos, which could be the seed of the asymmetry between matter and antimatter that we observe in the universe. She has also pioneered the use of new methods to study chiral symmetry breaking in quantum chromodynamics, the theory of strong interactions responsible for the structure of particles composed of quarks and gluons, such as protons and neutrons.

Pilar Hernández is a regular lecturer at prestigious international schools and conferences, and has supervised numerous national and European projects (<https://asymmetrynet.eu>). She has been a member of several national and international scientific committees or panels of evaluation, review and selection. She currently coordinates the Particle and Nuclear Physics Area at the Spanish State Research Agency. She is a member of the CERN Science Policy Committee (CERN-SPC) since 2020 and she has been appointed vice-chair for the year 2024.

References of interest

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Hitzaldia CERN udako eskolak | Charla cursos de verano del CERN:
<https://cds.cern.ch/record/2201040>

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