

The SM and Beyond in the LHC era: QCD, extended Higgs sectors, flavour, neutrinos, Dark Matter

Research Project / Research Group Description:

This project will analyze the results of the LHC experiments together with lower energies precision experiments to look for new physics.

- In models beyond the Standard Model the Higgs particle found at LHC is usually accompanied by additional Higgs states that could be in reach at colliders.
- The origin of flavour, the fact that we have three identical copies of matter particles from the point of view of the gauge quantum numbers, remains one of the biggest problems in high-energy physics nowadays. New experimental data from LHC and indirect experiments may help us to understand its origin.
- Neutrino masses may provide additional clues on the mechanism responsible from the generation of masses and the origin of flavour.
- Dark matter is a necessary ingredient in standard cosmology which is not provided by the SM. It could be related to neutrino masses and searched for at the LHC and other experiments.

Our group is part of the IFIC, University of Valencia-CSIC (<http://ific.uv.es>) and of the Department of Theoretical Physics of the University of Valencia (<http://www.uv.es/fisteo>). The senior staff of the group consists of Gabriela Barenboim, Jose Bordes, Francisco Campanario, Vicent Gimenez, Sergio Palomares, Joannis Papavassiliou, Jose Peñarrocha, Armando Perez, Miguel Angel Sanchis, Arcadi Santamaria, Jordi Vidal and Oscar Vives. We have more than 30 collaborators from foreign institutions which participate actively in the projects.

Job position description:

- The candidate will develop his research under the supervision of one of the senior members of the group and, possibly, one of the foreign senior scientists, and in collaboration with other local researchers, postdocs and students.
- She/he should have a good basis in quantum field theory, relativity and elementary particles.

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Research project/Research Group website

<http://particles.uv.es/>



This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No. 713673.