

Departamento de Física Atómica, Molecular y Nuclear

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Predocctoral Contract (FPI fellowship) for a PhD thesis in Theoretical Nuclear Physics

The Theoretical Nuclear Physics group at the Department of Atomic, Molecular and Nuclear Physics (University of Seville) offers a 4-year PhD student contract (FPI program) to work in research related to the project: "Studies of strong and electroweak scattering reactions with nuclei at low and intermediate energies". Ref. FIS2017-88410-P. PI.- Juan Antonio Caballero & Antonio M. Moro.

The candidate selected will develop his/her PhD thesis in some of the topics included in the research project:

i) **Electroweak interactions at intermediate energies.** The interest is centered in studies of neutrino scattering reactions on nuclei. The proposal of the PhD thesis is the development of a realistic description of the process and its implementation into the Monte Carlo simulation codes used to analyze data (this is of great interest in the understanding of neutrino oscillations). This project will be done in close collaboration with the experimental groups participating in diverse Collaborations: MiniBooNE, T2K, NOMAD and MinerVA.

ii) **Nuclear structure and reactions with radioactive beams.** The PhD candidate will work in the development of formalisms needed to describe the structure and different types of reactions (transfer, breakup...) and its application to the interpretation of experiments performed at some leading international radioactive-beam facilities: ISOLDE, GANIL, Saclay, TRIUMF, GSI, RIKEN and RIBRAS. Other topics to be considered are the algebraic treatment of scattering reactions as well as algebraic models of nuclear structure.

We are looking for highly motivated students with a Master degree in Physics. Knowledge on programming and proficiency in English will be considered. The PhD contract offers the possibility to spend 3 months per year in international institutions. Interested candidates should send a letter of motivation including two reference letters, a CV and a copy of academic records to Juan A. Caballero (jac@us.es) and/or Antonio M. Moro (moro@us.es).

General information (October 9-29): <https://goo.gl/E6E3Wo>