Dear All,

In case you know somebody that could be interested in start a PhD in our institution next fall approximately.

The Instituto de Física de Cantabria (IFCA, CSIC-UC) announces the upcoming opening of one predoctoral positions in the Particle physics and Cosmology groups towards a completion of a PhD Thesis. The candidates must have a Master's Degree in Physics at the time of the appointment. Other consideration valued are grades, languages skills specially English, and modern programming languages (C++, python, scripting languages, etc). The positions are 4-year PhD contracts (Personal Investigador Predoctoral en Formación or Formación de Personal Investigador-FPI) by the Spanish Ministry of Science, Innovation and Universities, through the "Programa Estatal de Promoción del Talento y su Empleabilidad en I+D+I" (FPI) associated to the María de Maeztu Programme for scientific excellence, obtained by IFCA this present year [1].

The position is: MDM-2017-0765-18-1, "Revealing the hidden nature/constituents of the Universe" , Rocio Vilar /Chema Diego

The summary of the project is the following (more details is in the attachment):

The propose project use a new initiative to search for DM through Direct Search at underground Laboratories, called DAMIC (DArk Matter In CCDs). This experiment is based on high CCD technology with unprecedented sensitivity to sub-GeV DM particles. The DAMIC detector is currently located at SNOLAB, Sudbury (Canada), and the next generation DAMIC-M will be located at the Laboratoire Souterrain de Modane (LSM), Modane (France). DAMIC-M will be fully working in about 3-4 years but some remaining challenges need to be addressed first. The student will participate in different tasks, that will contribute to the solution of existing problems.The candidate will work on the understanding of the low backgrounds which includes for instance, GEANT4 simulations, the understanding of the scientific CCDs of DAMIC, radio purity measurements, and the data analysis for DM detection or set a strong limits in the light DM candidates as predicted in various models. In order to accomplish this, the student will have to use several facilities such as the ones in our institution, and in the Underground Laboratories of Canfranc (Spain), and Modane (France) among others. Also the fellow will exploit the complementarity between DM searches (DAMIC-M experiment) and astrophysical observations to get a coherent picture of the state of the art in the DM sector. The student will use the results obtained in the analysis of the DAMIC-M data and those from cosmological measurements (Plank, Hubble) to set further constrains on the DM sector. DAMIC results along with Planck observations will be used to test cosmological models. Another approach to study the DM sector is by looking at gravitational lensing effect of the galaxy clusters. Studying the profile of clusters, some constraints on the cross section of the annihilating DM will be set comparing with different models. The CMB anisotropies can be used to constrain such a decaying particle model of dark matter. With this program, the student will gain experience in both, particle physics and astrophysics.

For further details contact Rocio Vilar (vilar@ifca.unican <mailto:vilar@ifca.unican>.es) or Jose M. Diego (jdiego@ifca.unican<mailto:jdiego@ifca.unican>.es)

Regards,

Rocio Vilar Cortabitarte

[1]http://www.ciencia.gob.es/portal/site/MICINN/menuitem.791459a43fdf738d70fd325001432ea0/?vgnextoid=131955e2d5e01610VgnVCM1000001d04140aRCRD&vgnextchannel=115222e988f75610VgnVCM1000001d04140aRCRD&vgnextfmt=formato2&id3=ed6c0217cb256610VgnVCM1000001d04140a____&lang_choosen=en