



Postdoctoral position in Particle Physics / Radio Detection of Axion Dark Matter

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In the framework of the ERC project G-LEAD, related to radio detection of axion dark matter, we would like to announce the availability of a post-doc position at the Particle Physics Department¹ of CEA.

Axions are hypothetical particles introduced to solve a limitation of the standard model known as the strong-CP problem. If dark matter is made of axions, it would manifest as an oscillating scalar field weakly coupled to the conventional electromagnetic field. The G-LEAD team is currently building a dish-antenna dark matter detector using large superconducting coils and a sensitive radiometer. The experiment will be located in Saclay and operated by a group including physicists, engineers and technicians from four departments of IRFU² (particle physics, instrumentation, cryogenics and magnetism, mechanical engineering). In our detector, the strong magnetic field and specific boundary conditions imposed could lead to a tiny excess of power in the radiometer. The apparatus is aimed at detecting dark-matter-induced signals in a broad frequency range between 10 GHz and 100 GHz.

The successful candidate will play a key role in the project as the responsible person for the building and commissioning of the radiometer. His/her work will include involvement in the simulations, antennas, signal amplification and processing, and data analysis.

Candidates should:

- Have a PhD in physics or instrumentation in relation with detection of radio frequencies
- Have expertise in microwave detection (>10 GHz)
- Be experienced in building and operating radiometers, cryogenic amplifiers, etc.
- Have some interest in high-energy physics and dark matter (though no formal background is required)

The funding is for 3 years, provided by the ERC, and includes provisions for conference travel and equipment.

CEA is a national scientific and engineering agency that plays a major role in fundamental research, energy, information-technology and health in France. CEA's Saclay research center is located in the greater Paris area about 20 km southwest of the city center. The Particle Physics Department includes leading members working on a wide range of subjects including LHC physics, neutrino experiments, cosmology, dark matter identification and civil applications.

Interested candidates should contact Pierre Brun (pierre.brun@cea.fr) with a CV and letter(s) of recommendation before end October 2020. The expected starting date of the contract is January 2021 .

¹ <http://irfu.cea.fr/dphp/en>

² <http://irfu.cea.fr>