Post doc:
Magnetic imaging with magnetoresistive sensors on microstructured thin films

Description of the offer:
Postdoc position in spintronics and magnetic sensing
-at the Service de Physique de l'Etat Condensé (SPEC), CEA Saclay, Gif-sur-Yvette, France
-in collaboration with the LICP, CEA-DAM Le Ripault, 37260 Monts, France

Starting date: January 2025.
Duration: 12+12 months
Research area: dynamic magnetic properties, magnetic sensors, magnetic imaging.

The overall strategy of the Oxide and nanomagnetism laboratory (LNO) at SPEC is in-depth understanding of magnetism in condensed matter with a good balance between state-of-the-art research, development of new instruments, and applications. This equilibrium is possible in this field where applications and research are very close. The LNO has specific skills, tools and expertise on the characterization and the development of magnetoresistive sensors with very high sensitivity and for various applications as magnetophysiology, MRI (Magnetic Resonance Imaging), nanometrology, NDT (Non Destructive Testing), automotive...
The postdoc will work in the frame of the CEA internal project called IMAGE (Magnetic imaging on microstructured thin films). Mapping the dynamic magnetic properties (e.g. microwave permeability) of magnetic samples is important for optimizing these materials for applications. The IMAGE project involves developing a setup for mapping dynamic magnetic properties by combining a scanner and giant magnetoresistance magnetic sensors, whose interest lies in their wide frequency detection bandwidth from DC to GHz, adapted to the problem. An initial DC measurement setup has been developed at SPEC. This setup will be adapted to frequency measurements, first in the radiofrequency range, then in the microwave range. 2D microstructured samples will be fabricated by LICP and be characterized by electromagnetic techniques at a global scale. The ultimate aim is to produce magnetic microwave permeability maps (local response) using the setup developed for the samples fabricated by LICP. These never-before-obtained maps will be used to develop and validate models of magnetic materials being developed by LICP for various electromagnetic applications (component noise reduction, antenna performance enhancement, etc.) and design new materials with enhanced performance.
The postdoc will work on the development of the RF setup in order to perform proof of concept permeability maps on calibrated samples. The postdoc will also participate to the development of GMR and TMR sensors and on model to understand and to analyse the maps measured.

Requirements
A successful applicant is expected to have a **PhD degree in Physics**. He/she must have a solid experimental background in magnetism and RF technics, skills such as instrumentation, setup development and spintronics being particularly relevant.

Contact and Application
The application should include a statement of research interest, CV, a copy of the PhD thesis, or equivalent, published articles and other relevant materials, if available. Also, letter(s) of recommendation can be included.

For further information about the position please contact:
Aurélie Solignac, email: aurelie.solignac@cea.fr
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