Institute of Microelectronics of Barcelona IMB-CNM CSIC

The **IMB-CNM** is the largest institute in Spain dedicated to the research and development of Micro and Nano Technologies and Microsystems and with unique capabilities in silicon technology. It belongs to CSIC since its foundation in 1985 and is distinguished as a María de Maeztu Unit of Excellence.

IMB-CNM aims to contribute to the advancement of knowledge and to the economic and social development of society, as well as to the training of researchers and engineers and to the advice to public and private entities.

The research activities of IMB-CNM are dedicated to Micro/Nano Integrated Systems: miniaturized electronic systems which include sensing and/or actuating capabilities in addition to electronic information processing, power management and external interfaces.

The IMB-CNM is located on the Autonomous University of Barcelona (UAB) Campus and contains the largest clean room facilities in Spain with full capability to process its own CMOS technologies and laboratories.

Project Type: TFG

Project Title: Characterization of cutting-edge particle detectors for High Energy Physics experiments

Research Group: Radiation Detectors Group (RDG)

Project Description:

- The candidate will get involved in the characterization of the latest prototype productions of Low Gain Avalanche Detectors (LGAD) fabricated at the IMB-CNM. Thanks to their outstanding timing and tracking performance, these detectors are within the candidates for the next generation of particle tracking detectors for high energy and particle physics experiments. Our group is developing new technological solutions to improve the sensors response under heavily irradiated conditions, while maintaining a reliable fabrication yield. This research line is comprehended within the CERN's R&D on particle detectors strategy (DRD3).
- It is a fully experimental work to be mainly developed in the radiation detectors laboratory in close collaboration and under the guidance of the group researchers.

Work Plan:

- The candidate will carry out full electrical characterization (current and capacitance characteristics) of the prototypes, as well as their sensing performance (with particle and light sources) and timing characteristics.
- He/She will also be instructed on the device design and technological details (even if not intended to participate in the fabrication process itself), together with the most advanced testing techniques for particle detectors.
- He/She will be trained on the use of data management and reporting tools and strategies, and it is expected to provide regular reports on our different internal and collaboration meetings.
- Tentative work plan:
  - Introduction to LGAD technology and performance
  - Training on characterization tools and samples handling

Carrer dels Til·lers s.n., Campus UAB | 08193, Cerdanyola del Vallès
https://www.imb-cnm.csic.es | talent@imb-cnm.csic.es
+34 93 594 7700

- Analysis of the production features, identification of the samples
- Electrical characterization of the samples + Report
- Sensing performance (different techniques) + Report
- Timing performance (different techniques) + Report

Candidate desired studies:

- ✓ BSc in Physics
- ✓ BSc in Electronic Engineering for Telecommunications

Application Process:

Before applying, please **check with your TFG/TFM program supervisor,** as he/she may already be coordinating with us to assign the project.

If there is no such coordination**, complete this form and send your CV and a motivation letter** to **Talent@imb-cnm.csic.es**, with the **subject: "TFG/TFM at IMB-CNM"**

Your CV will be forwarded to the Researcher leading the project who will contact you directly if interested.

Check our website for more information about the IMB-CNM and our research activities

https://www.imb-cnm.csic.es/en

Take the next step in your research career with us!

*By applying, you accept our data protection policy.

**IMB-CNM (CSIC) adheres to the European Charter and Code of Conduct for Researchers, ensuring full alignment with their principles and requirements, including equal opportunity, transparency, merit and ability, caring for an open, fair, and excellence-based hiring processes.

IMB-CNM holds the HR Excellence in Research award, which acknowledges CSIC's commitment to continuous improvement in HR strategies for researchers.

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