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/TFM

Project Title: Design of a Phase-Locked Loop (PLL) for advanced CPUs

Research Group: Integrated Circuits and Systems (ICAS)

Project Description:

- The main goal of the project is to design a PLL to generate the internal clock for an advanced CPU. The PLL will be part of an Integrated Circuit that generates the working clock for a CPU. Furthermore, it must generate various internal signals at different frequencies for other digital blocks such as buses, I/O, communication interfaces, etc. The PLL must be digitally configured.

- This project has to be carried out in a mixed-signal Integrated Circuit design environment, combining analogue blocks (oscillators, filters, etc) and digital (control and configuration) to implement a PLL suitable for an advanced CPU.

Work Plan:

- The project will begin with a bibliography review to evaluate various design alternatives.
- From this analysis, a suitable design will be selected and evaluated through electrical, digital or mixed signal simulation to perform design optimisation.
- Finally, the physical implementation will be carried out and verified.

Candidate desired studies:

- ✓ MSc Semiconductor Engineering and Microelectronic Design
- ✓ MSc Research and Innovation in Computer-Based Science and Engineering
- ✓ MSc Telecommunications Engineering
- ✓ BSc Electronic Engineering in Telecommunications
- ✓ BSc Industrial Electronics and Automation Engineering

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.

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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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