

LOCATION: HTC Eindhoven

Name of department	:	Central R&D / Physical Design Methods
Training/education	:	M.Sc student or Ph.D student
Branch of study	:	Microelectronics
Differentiation	:	Development of electrical diagnosis for Analogue / Mixed Signal products
Trainee/Graduate	:	
Period of time	:	6 to 9 months
Remarks	:	High Tech Campus Eindhoven

Department description:

NXP is a leading semiconductor company founded by Philips more than 50 years ago. Headquartered in Europe, the company has about 33,500 employees working in more than 20 countries.

The Physical Design Methods (PDM) department is part of the Central R&D organization of NXP. The PDM Department is responsible for defining next generation solutions and methodologies in the area of modeling, verification and test. The department develops innovative methodologies, preferably supported by tools, based on a deep understanding and modeling of physical phenomena, physical design and test aspects.

Project formulation:

Development of electrical diagnosis for Analogue / Mixed Signal products

Project description:

In electrical diagnosis we predict the location of a defect based on the responses of an IC. These responses are compared with the expected responses of specific defect locations. In the digital domain this method is well established, in the analog/mixed-signal domain it is just emerging. Within NXP, an internal simulation tool based on Defect-Oriented Test is available, which is called AnalogShell. This tool is primarily used to determine fault coverages in analog/mixed signal designs but it also enables analog diagnosis. Currently, a very basic algorithm is used to select the most likely defect locations. The goal of this assignment is to apply this tool to one or more industrial ICs and evaluate and improve diagnosis methods for mixed-signal ICs.

The project can be divided into the following different subtasks:

- Analogue fault simulation to calculate the test coverage for Analogue ICs (or use existing calculations)
- Compare fingerprints with fingerprints of known faulty ICs
- Propose and evaluate metrics to select the best candidates (matching/prediction/...)
- Extend fault models to improve the success rate or reduce ambiguity in the localisation

Requirements:

- Master or higher education background
- Knowledge of Analog/ Mixed signal IC design
- Experience with Analogue /Mixed signal simulation tools
- Good English language skills

For More Information contact:

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