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Politecnico di Torino

Academic Year 2008/09 (first time established in A.Y.2007/08)

01LTCJA

Modelling of Mixed-Signal Circuits

1st degree and Bachelor-level of the Bologna process in Electronic And Computer Engineering - Vercelli (II FACOLTA' DI INGEGNERIA)

Teacher	Status	SSD	Les	Ex	Lab	Years Stability

SSD	CFU	Activities	Area context
ING-IND/31	5	C - Affini o integrative	Discipline ingegneristiche

Objectives of the course

This course aims at providing the basics of macromodeling techniques that are gaining importance in applications, particularly in the domain of high-speed information and communication technologies. Behavioral black-box modelling methods are presented, applied to logic devices and interconnects for signal transmission. Details for practical implementation are provided.

Expected skills

Students will learn the basics of linear macromodeling of interconnection systems, and will have some exposure to advanced nonlinear techniques for logic devices.

Prerequisites

Fundamentals of circuit theory.

Syllabus

- Introduction to behavioral black-box modeling
- Macromodeling of lumped linear dynamical systems
- Macromodeling of distributed linear dynamical systems
- Macromodeling of nonlinear dynamical systems

Laboratories and/or exercises

Practical examples based on the use of Matlab, Spice, and commercial electromagnetic solvers.

Bibliography

Wilhelmus H. A. Schilders, Henk A. van der Vorst : 'Model Order Reduction: Theory, Research Aspects and Applications' Springer 2008

Revisions / Exam

Homeworks and an individual project.

Programma definitivo per l'A.A.2008/09

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