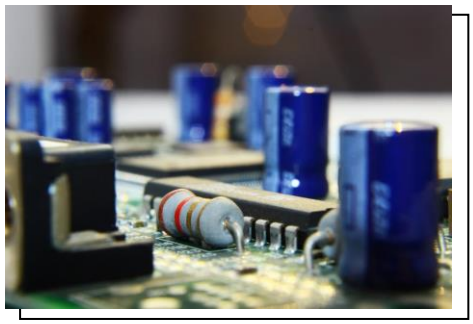
Institut für Elektronik

Master's thesis

In cooperation with amsAG

Evaluation of electro-thermal influenced reliability effects using Cadence Legato tool



Current Status and Motivation:

Operation of integrated semiconductor components like MOSFETs is underlying performance losses due to applied stress (electrical fields, temperature). This effect is called device degradation or aging and causes shifts of device dominant parameters like threshold or mobility. For an IC (integrated circuit) developer it is highly important to have a simulation possibility that predicts these shifts. The investigation and benchmarking of such a simulation tool is the aim of this thesis.

The Legato tool from Cadence claims to predict the temperature dependent stress what would lead to highly accurate simulation results. The target for amsAG is to evaluate and validate this tool for future usage in the circuit development cycle.

Research Topic(s):

- Degradation mechanisms in MOS devices
- Electro-thermal solver concepts
- New age industry tool for reliability analysis

Approach / Methodology:

- Literature- and internet study: reliability and electro-thermal effects
- Tool evaluation
- Test-case analysis using reliability effects
- Test-case analysis with combined thermal and reliability effects
- Validation of simulation results
- Documentation

Organisational Matters:

- Start of work: 1.3.2020
- Workplace: amsAG
- Paid thesis: 1k€/month + 3k€ bonus
- 6 month duration

Contact person / Supervisor:

IFE: Must be defined BEFORE start of master thesis!

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