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FACULTY: Faculty of Mathematics and Natural Sciences
DEPARTMENT: Department of Informatics
AREA OF EXPERTISE: RF MEMS
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DISSERTATION TITLE: *Physical model for charge accumulation and technology development for robust RF MEMS switches*

This dissertation is within the field of Micro/Nano system research. The main aim is to develop a high reliable Radio frequency (RF) micro-electromechanical system (MEMS) capacitive switch. RF MEMS switches are expected to be a very promising technology for many microwave and wireless applications. However, the reliability problem still limit factors their commercialization. The lifetime of these switches is strongly influenced by dielectric charging. The key challenge is to understand the principle of charge injection when the field across the dielectric layers.

In this thesis, to find the solution of the reliability problem, we firstly investigated the physics of dielectric charging in capacitive RF MEMS switches, and concluded two basic approaches for solving the problem of dielectric charging. Based on these approaches, we proposed three novel solutions to solve the dielectric charging issue. The experimental results indicate that multi-layer dielectric and doping dielectric are useful for robust RF MEMS switches. Furthermore, the dissertation provides knowledge about Microsystems technology and semiconductor physics.

We ask you to take your audience into account and think of the following:

Start with conclusions and results.

Journalists are trained “to cut from behind” and expect to find the most important things first. And the most important regarding press releases are what you have found out. If you wish to get publicity you must start where you would normally end: with the conclusions and the results. Explain the consequences of your research, and if relevant, the practical implications of your work.

Write simple!

Read the summary out loud to a friend without knowledge of your research field. Avoid technical terminology and use everyday language if possible: "Better roughly right than precisely wrong".

Write short! 1/2 to 1/1 A4-page

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