

# Preface

In recent years the continuous improvement of silicon technologies lead to the realization of transistors with cut-off frequencies beyond 200 GHz. This development has enabled the integration of cost-efficient transceivers in the millimeter-wave regime that profit from high integration densities and yield of silicon-based technologies. Applications for such systems span from automotive radar to high data rate communication and high resolution imaging.

Automotive radar systems are considered the key technology for the realization of active and passive vehicular safety features to further reduce the number of fatalities due to traffic accidents. Silicon-Germanium technology offers the possibility of cost-efficient manufacturing of such systems for a broad range of traffic participants.

This book presents the analysis and design of integrated automotive radar receivers in Silicon-Germanium technology for use in complex multi-channel radar transceiver front-ends in the 77 GHz frequency band. The main emphasis of my work is the realization of high-linearity and low-power modular receive channels as well as the investigation of millimeter-wave integrated receiver test concepts.

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