Department of Electrical Engineering & Computer Science
Master Degree Course Electronics Engineering, MSc EE

HOCHSCHULE BREMEN
UNIVERSITY OF APPLIED SCIENCES

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Muhammad Faisal

Computer Aided Design of Coupled Resonator Microwave Filters

ABSTRACT - Masterthesis

The increase in demand for microwave and RF communication technologies such as cellular and satellite communication, point-to-point radio links, as well as radar systems require modern microwave filter design techniques to minimize electromagnetic interference and cross talk. Electrical requirements such as insertion loss, skirt selectivity and flat group delay, in developing front-end filters are important aspects in the performance of RF systems, all these boundaries and limitations are big challenges for classical and modern filter design techniques. In some cases, the physical dimensions, weight and development cost also become very essential factors thus affecting the whole design approach. Moreover today's competitive business world allows very little time for design and development. This rising demand for optimum filters calls in for the use of advanced Computer Aided design Techniques.

The goal of this master thesis is the development of an automated design process for planar resonator coupled microwave filters. Using the coupling matrix synthesis technique from we can generate a coupled resonator model for any given filter specifications by extraction and simulation.