TECHNISCHE FAKULTÄT

Department Elektrotechnik-Elektronik-Informationstechnik

EEI-KOLLOQUIUM

Applications of Ferroelectrics in Microwave Devices, Circuits and Systems

Professor Dr. Spartak Gevorgian
Chalmers University, Gothenburg, Sweden

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Diskussionsleitung: Prof. Dr.-Ing. R. Weigel

The presentation reviews the current status of the ferroelectrics in microwave devices, circuit and systems. The progress in microwave technology heavily depends on the available materials and components. Computers have been and are the main driving force when it comes to the development of new materials for electronics application. The ferroelectrics are a typical example where the microwave technology largely benefits from that. After years of extensive material optimization and development of the laboratory device demonstrators, several companies started commercial developments and marketing of the complex microwave circuits and systems based on the ferroelectric films and varactors. Today the mobile phone, military and automotive microwave systems are the largest market sectors where ferroelectric based components are used. The presentation covers the applications of ferroelectrics in phase and frequency agile systems including delay lines, voltage controlled oscillators, steerable beam phase arrays etc. A special emphasis is made on tunable Thin Film Bulk Acoustic Wave Resonators (FBAR). Ferroelectrics and multiferroics are considered for future microwave Integrated Optical Devices and Sensors. The advantages of the ferroelectrics (varactors) in comparison with the competing technologies (low loss, high speed, small size, low power consumption/low leakage currents, simple fabrication process, cost effective etc.) are considered.