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SiGe HBT technology and modeling for sub-mm-wave electronics

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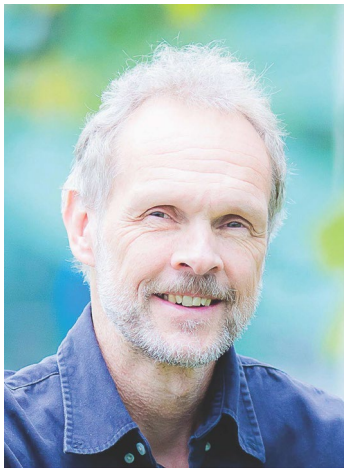
Birck Nanotechnology Center Room 1001

An overview on the most recent and the expected future development of SiGe heterojunction bipolar transistor (HBT) performance for (sub-)mm-wave applications is provided. Achieving cut-off frequencies beyond 500 GHz (for fT and fmax simultaneously) has been made possible by recent European joint projects with a very low development cost compared to CMOS. Accurate device modeling proved to be a valuable guide for process development and a key enabler for minimizing circuit design and fabrication iterations as well as for creating a SiGe HBT technology roadmap. Fundamental differences between HBT and field-effect transistor (FET) high-frequency performance are discussed based on experimental and predicted data.

Michael Schröter received his Dr.-Ing. degree (1988) and venia-legendi (1994) in electrical engineering from Ruhr-University Bochum, Germany. He held engineering and management positions at Nortel/BNR in Ottawa, Canada, and at Rockwell and RFNano in Newport Beach (CA). Since 1999, he has been a Full Professor at Technical University Dresden, Germany. He was a co-founder of XMOD Technologies in Bordeaux, France, the Technical Project Manager for DOTFIVE and DOTSEVEN, and has led the Carbon Path project within the Excellence Cluster CfAED. He is presently a member of the ITRS/IRDS RFAMS subcommittee and the BCICTS ExCom and TPC. He has co-authored over 240 publications and two textbooks, and is the developer of the industry standard HBT compact model HICUM.



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