

CENTER FOR NANOSCALE SCIENCE AND TECHNOLOGY

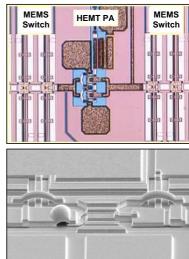


University of Illinois at Urbana Champaign

Center for Nanoscale Chemical-Electrical-Mechanical Manufacturing Systems

Technology Directions for Future RF Applications

Recent advances in the performance and maturity of a number of key technologies are enabling a new generation of electronic systems for future rf applications. Advanced semiconductors, photonics and nanotechnology are converging with new design, processing and packaging schemes to revolutionize rf system performance. Millimeter-wave circuits now operate above 300 GHz and digital circuits above 100 GHz. Monolithic integration of MEMS and HEMT devices enables intelligent circuits that can adapt to their environment. Low-power InSb devices enable microwatt receivers, while high-power GaN devices enable kilowatt transmitters. Microwave transceivers built using wafer-level micropackages reduce size and weight by a factor of 100, enabling new phased-array and other applications. We present here an overview of the key technologies behind these achievements and discuss their impact to future electronic systems.





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Dwight C. Streit Technical Development Northrop Grumman Space Technology

Dwight C. Streit is vice president, Technical Development, for Northrop Grumman Space Technology. He is responsible for the research and technology development required for advanced semiconductors, microelectronics, communications and satellite payload electronics. Dr. Streit joined Northrop Grumman via the acquisition of TRW in 2002; he joined TRW Space & Electronics in 1987. He is an IEEE Fellow and a member of the National Academy of Engineering. He received his Ph.D. in electrical engineering from UCLA in 1986, and was the UCLA Engineering Alumnus of the Year in 2003.

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