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ADVANCED GaAs IC's

Chairman: Roger Sudbury—M.I.T. Lincoln Lab

Session Abstract: This session includes papers describing significant circuit capabilities achieved with GaAs MESFET, HEMT, and HBT technologies. Continued advances in the level of integration, higher operational frequencies, and lower power consumption are reflected in these papers. GaAs MESFETs with 0.25 micron gates are used to achieve monolithic variable gain Ku-band LNAs (greater than 25 dB gain, 30 dB gain control, less than 3.5 dB NF from 14–17 GHz) and a Ka-band LNA module (5 dB gain, 26.5–40 GHz). The MESFET and GaAs HBT technologies have been used to achieve monolithic successive-detection logarithmic IF amplifiers with 60 dB dynamic range (less than ± 1 –2 dB log error) at 1–1.5 GHz IF with 1/3 to 1/5 the power consumption and less than 1/25 the size of state-of-the-art Si-bipolar-based hybrid log amps of comparable performance. The HEMT technology has been used to achieve coplanar waveguide amplifiers and frequency doublers in Ka band to effectively reduce substrate modes.

8:30 a.m.–10:00 a.m., Wednesday, June 14, 1989
Terrace Room