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SOLID-STATE DEVICES AND CIRCUITS

Chairman: Dean F. Peterson—Steinbrecher Corporation

Session Abstract: Improvements in output power, frequency of operation and linearity of solid-state circuits have been made possible through new processing techniques, monolithic integration, better thermal control and more accurate device models. Large area HBTs with careful thermal design have produced 2.5 watts output power at X-band with associated added power efficiencies of 30 percent. Monolithic processing techniques have improved the performance of microwave silicon bipolar transistors and made possible multiple diode arrays for use in mm-wave power frequency multipliers. Silicon transistors with f_{\max} 's greater than 20 GHz demonstrate monolithic frequency division of 7 GHz signals, while a grid of back-to-back GaAs PIN diodes operating as a quasi-optical frequency tripler have delivered watt-level power at 99 GHz. Experimental and analytical work on GaAs PIN diodes has yielded new insight into the contributions to distortion in switches.

2:00 p.m.–3:30 p.m., Thursday, June 15, 1989
Center Theater