Abstracts

Optically smart active antenna arrays

D.Z. Anderson, V. Damiao, E. Fotheringham, D. Popovic, S. Romisch and Z. Popovic. "Optically smart active antenna arrays." 2000 MTT-S International Microwave Symposium Digest 00.2 (2000 Vol. II [MWSYM]): 843-846.

A prototype X-band active antenna array with adaptive optical processing is presented. The optical processor, referred to as an auto-tuning filter, is able to extract the strongest principal component in a two-signal space with up to 30 dB enhancement with respect to the other signals. The processor is compact (8 cm by 4 cm) and scalable to a large number of antenna elements and incident RF waves (sources). Three major components of this system are described in detail: (1) the lens antenna array front end with angle-of-arrival pre-processing; (2) the electrooptic modulation and optical carrier suppression stage; and (3) the smart optical processor (auto-tuning filter).

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