Abstracts

Adaptive beamforming of ESPAR antenna using sequential perturbation

Jun Cheng, Y. Kamiya and T. Ohira. "Adaptive beamforming of ESPAR antenna using sequential perturbation." 2001 MTT-S International Microwave Symposium Digest 01.1 (2001 Vol. I [MWSYM]): 133-136 vol.1.

A technique for adaptively controlling the loaded reactances on the passive radiators, thus forming both beam and nulls is presented, for the first time, for the electronically steerable passive array radiator (ESPAR) antenna. Conventional adaptive array antenna processing must access signals on all of the array antenna elements. However, because the low-cost ESPAR antenna only has a single-port output, all of the signals on the antenna elements cannot be observed. The adaptive algorithm proposed in this paper is based on the steepest gradient theory, where the reactances are sequentially perturbed to determine the gradient vector. Simulations show that the ESPAR antenna can be adaptive. The statistical performance of the output SIR of the ESPAR antenna is also given.

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