Abstracts

Statistical behavior and performance of adaptive antennas in multipath environments

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Adaptive antennas can behave very differently in multipath and nonmultipath environments. In this paper, we study the behavior of adaptive antennas in multipath Rayleigh fading by investigating the statistical variation of the spatial signature of a signal incident upon an antenna array. A method for analyzing the multipath performance of adaptive antennas is presented. It can be shown that the antenna performance becomes less dependent on the angles of arrival (AOA's) of the incident signals as their angular spreads and antenna element spacing increase. In general, antenna performance improves for increasing element spacing because fading reduction is more effective and interference suppression is possible even when the mean AOA's of desired and interfering signals coincide.

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