

Scanning Properties Of Superdirective Antenna Arrays

Dawoud, M.M.;King Fahd Univ. of Petro.Min., Dhahran;

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King Fahd University of Petroleum & Minerals

<http://www.kfupm.edu.sa>

Summary

Investigates, the scanning properties of superdirective array functions, which is essential in applications where the main beam has to be steered. Many examples can be found in the applications related to phased and adaptive arrays. The study shows that the superdirective properties of the array are maintained over an extremely small scan angle range of the main beam, beyond which the array pattern collapses. These results apply when the main beam scanning is generated through the use of the progressive phase shift. It has also been found that the superdirective array properties can be maintained over an appreciable scan angle, if the array illumination function is readjusted with the scan angle. Examples of the steered superdirective pattern are given for an eleven-element two-wavelength array. The narrow main beam is maintained over a scan angle of 200, while the side lobe level is maintained at the prescribed level. The results confirm that efficient superdirective functions can be used in applications where the main beam is to be scanned around the boreside direction

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