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DESIGN OF HORN ANTENNA ARRAYSFOR THE GENERATION OF LOW SIDELOBES

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ABSTRACT

The source of electromagnetic waves is antenna. Antenna is a device which radiates electromagnetic energy into free space in all directions single antenna characteristics like high beam width, low gain and low bandwidth are not sufficient in radar communication system for beam steering array antennas are designed for improving the parameters of beam width, gain and bandwidth.

In the conventional arrays side lobe level -13.5 dB is the obstacle to find the object in the radar system since main beam to first side lobe level is -13.5 dB. In the first side lobe level the most of the power is diverted from main beam, to overcome this and reduce the side lobe level is the array system. Standard amplitude distribution is used to reduce side lobe level. In this work triangular amplitude distribution is used to reduce the side lobe level up to -26.8dB. The standard Horn antenna is used in this work to produce narrow beams and high gain. By neglecting inter element interference the desired Horn arrays for N=10, 20, 40, 60 are designed. By adopting standard amplitude distribution to these arrays side lobe level are also reduced and are compared with the isotropic arrays. The results come up with good agreement.

KEYWORDS: Antenna Arrays, Horn Antenna, Side Lobe Level, Pattern Multiplication, Amplitude Distribution