

论文

面向ATR的平面隙缝阵列天线电磁散射特性研究

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摘要

该文针对主动雷达导引头对防空导弹武器系统制导雷达的检测与识别需求,通过对制导雷达平面隙缝阵列天线电磁散射机理的分析,建立了天线的电磁散射模型,研究了天线RCS的计算方法,结合仿真计算结果,给出了天线尺寸、隙缝数目及入射波频率等因素对天线RCS的影响规律。仿真结果表明,雷达天线RCS较大且具有明显的周期性,其幅度特征和周期特征可以作为识别的重要依据,为主动雷达导引头对地面雷达站的检测与识别奠定了基础。

关键词 [阵列天线](#); [电磁散射](#); [目标散射特性](#); [雷达散射截面](#); [目标识别](#)

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Study on ATR-Oriented EM Scattering from Planar Slotted Array Antenna

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Abstract

In order to satisfy some special demands for detection and recognition to the guiding radar of Air Defense Missile Weapon System (ADMWS) using an active radar seeker, an analysis method of planar slotted array antennal RCS is stressly studied based on the theory of the antennal electromagnetic scattering mechanism. An electromagnetic scattering model of the antennas is established, and it introduces the detailed calculation procedure. The influences to antennas' RCS of factors such as antenna size, frequency and quantity of slot etc are detailedly discussed. The simulation result shows that RCS of radar antenna is biggish and possesses obvious periodicity, and the range characteristic and period characteristic can be regarded the important basis of recognition. The work is meaningful for the research on detection and recognition algorithm for ground-based radar stations.

Key words [Array antenna](#) [EM scattering](#) [Target scattering characteristics](#) [RCS](#) [ATR](#)

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