

## 航天电子技术

### 加载复合平面的缝隙天线RCS特性研究

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#### 摘要:

分析了人工磁导体和理想电导体复合表面对入射电磁波反射相位相差 $180^\circ$ 的特点。通过合理设计两个表面的比例, 可以实现复合平面结构后向电磁散射的抑制。将该复合表面应用于缝隙天线的设计, 达到了在不影响天线辐射效能的同时减少雷达反射截面(radar cross-section, RCS)的目的。实测结果表明, 加载复合表面的缝隙天线在设计频带内的RCS减少了10~15 dB, 进一步验证了复合平面对后向电磁散射的抑制效果。

关键词: 缝隙天线 雷达反射截面 人工磁导体 反射相位

### Study on RCS of slot antenna loaded composite surface

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#### Abstract:

The character that the incident wave from the composite surface combined by artificial magnetic conductor (AMC) and perfect electric conductor (PEC) has an  $180^\circ$  phase shift is studied. By designing the proportion of two surfaces, the composite surface will show obvious RCS reduction in backward direction. Then the composite surface is used on a slot antenna to reduce the RCS, and the radiation of the antenna will not be changed. The measured result shows that the RCS of antenna loaded composite surface reduces 10~15 dB in the designed band, so the backward RCS reduction of the composite surface is validated.

Keywords: slot antenna radar cross-section (RCS) artificial magnetic conductor (AMC) reflected phase

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