

论文

基于幅度加权的均匀线阵近场波束聚焦方法

种兰祥¹;李红红¹;张志勇¹;宋永明²

(1. 西北大学 信息科学与技术学院, 陕西 西安 710069;
2. 陕西地矿局 物化探队, 陕西 西安 710055)

摘要:

为了降低相控阵列相移器和控制器的复杂度与成本, 基于对阵元辐射振幅加权, 提出运用函数逼近方法来计算各阵元辐射振幅. 针对一维线阵, 将空间辐射振幅分布设为 $\delta(r-r_0)$, 可计算出每个阵元辐射振幅的取值, 实现阵列波束在近场 r_0 处会聚. 举例说明了该方法的有效性. 该方法容易推广到面阵和阵元辐射具有不同偏振方向的横波或纵波近场空间波束聚焦计算中.

关键词: 相控阵列 幅度加权 波束聚焦 仿真实验

Method for a linear array beam focusing in the near field based on amplitude weighting

(1. School of Info. Science and Tech., Northwest Univ., Xi'an 710069, China;
2. Physical and Chemical Geological Prospecting Party of the Shaanxi Geology Bureau, Xi'an 710055, China)

(1. School of Info. Science and Tech., Northwest Univ., Xi'an 710069, China;
2. Physical and Chemical Geological Prospecting Party of the Shaanxi Geology Bureau, Xi'an 710055, China)

Abstract:

Based on amplitude weighting, an approaching-to-function method for a linear array beam formed in the near field is proposed in order to reduce the complexity and cost of the phase shifter and controller in the phased array. By assuming that the amplitude distribution function in space to be $\delta(r-r_0)$, in which r_0 is the vector of focus, the value of every element radiation amplitude can be calculated. The validity of the method is also illustrated with examples. Moreover, this method can be extended to the planar array or other array elements with different polarization directions.

Keywords: phased array amplitude weighting beam focusing simulation experiment

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通讯作者: 种兰祥

作者简介:

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