

论文

一种基于线阵扫描成像的红外搜索跟踪一体化系统设计

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摘要:

分析了红外搜索跟踪系统的特点, 比较了目前广泛采用的几种典型设计方案。针对某地基防空警戒红外系统设计要
求, 提出并实现了一种新的基于线阵扫描成像+伺服周扫的系统设计方案, 重点介绍了其中关键部分实时信息处理
分系统的设计实现方法。此设计的特点是能够以低成本的单一系统实现搜索跟踪一体化功能,既能实现目标的快速
全空域360° 搜索监视, 又能对重点目标实现高精度跟踪测距, 形成目标三维航迹, 使其具备真正的光电雷达功
能。外场试验实测数据验证了系统的探测能力。

关键词: 红外搜索跟踪系统 弱小目标 目标检测 实时信息处理

An Incorporate System Design of Infrared Search and Track Based on Line-array-scan Imaging

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Abstract:

The characteristic of the Infrared Search and Track System (IRST) is analyzed, and several typical
design methods of IRST that applied broadly at present are compared. For the demand of the ground
aerial defense and alertness infrared system design, a new system design method based on line-array-
scan imaging and servo circling is proposed. The key part of the realization of the real-time signal
process subsystem is explained. The characteristic of the new design method is its capability to realize
both searching and tracking in a single system with low cost, it can realize the fast 360° whole airspace
searching and target surveillance, and can also precisely track the key target and measure its distance,
then come into being the three-dimensional track of the target. The new design provides the system with
the genuine function of the optoelectronic radar. The outfield test and the measured data validate the
detect capability of the system design.

Keywords: IRST dim small target target detection real-time signal process

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