

防御电子技术

双基地高频雷达一阶海杂波多普勒频移展宽效应

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摘要:

通过分析杂波单元上双基地角的变化,定量分析了双基地高频地波雷达一阶海杂波多普勒频移展宽效应,给出了展宽效应在雷达探测区域上的空间分布,分析了展宽效应的影响因素。同时分析了极限双基地角时的谱展宽效应和零频附近的一阶海杂波能量分布。分析表明,双基地杂波单元上的一阶海杂波Bragg峰多普勒频移是一个连续谱,因而在基线和发射机附近会形成雷达盲区。

关键词: 高频地波雷达 双基地海杂波 杂波单元 展宽效应 空间分布

Broadening effect of first-order ocean clutter Doppler shift of bistatic high-frequency ground wave radar

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Abstract:

The analysis on the deviation of bistatic angle over a clutter cell indicates that the first-order bistatic ocean clutter Doppler shifts of the high-frequency ground wave radar must be broadened. This kind of broadened spectra is then defined as broadening effect. And the spatial distributions of the broadening effect is subsequently given over the whole ocean surface being interrogated by the bistatic HF ground wave radar. The effects of various factors on the spatial distributions are presented, and at the same time the generation mechanism of this broadening effect is given. The case of large bistatic scattering angle is also investigated and the analysis of energy distribution near the zero frequency is presented. All these investigations indicated that the first-order bistatic ocean clutter could be modeled as continuous spectrum signals over a clutter cell. This kind of signal character would result in a blind zone near the neighborhood of baseline and transmitter of the bistatic radar.

Keywords: high frequency (HF) ground wave radar bistatic ocean clutter clutter cell broadening effect spatial distribution

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