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<< ◀◀ 前一篇 | 后一篇 ▶▶ >>

机载相控阵雷达中抑制杂波的线性预测法

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LINEAR PREDICTION APPOACH FOR CLUTTER SUPPRESSION IN AIRBORNE PHASED ARRAY RADARS

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摘要	参考文献	相关文章

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摘要 从一个多通道自回归过程拟合杂波信号的概念出发 ,提出了用线性预测法实现机载相控阵雷达的时空二维自适应信号处理。研究表明 ,杂波过程可以用一个低阶的多通道自回归过程很好地拟合,从而使用一个低阶的线性预测处理器以较低的代价实现准最优的处理。同时 ,这种低阶的线性预测处理器还具备冗余的自由度以对付除杂波外的其他有色噪声和干扰

关键词： 信号处理　相控阵雷达　线性预测　自适应滤波

Abstract： To cope with the time-varying and Doppler broadened clutter in air borne phasedar rayradars, it is required that the signal processing be adaptive and two-dimensional (spatia l and temporal) . However, the optimum adaptive spatial-tempor alprocessing is hard to be realized r ealtimelybecause of the large amount of computation it requires. From the idea of approximating theclutter process by using a multi-channel Auto-Regressive (AR) process, a linear prediction approach is proposed to realize adaptive spatial-tempor alprocessing of airborne adaptive array signals.The research shows that the clutter process can be well approximated by a low-order ARprocess,and a low-order linear prediction receiver achieves a suboptimum performance at a very low computational expense. Besides, the receiver has additional degree of freedom to cope with other colored noises and interference. In consideration of the many advantages of the linear prediction receiver in both algorithm and realization, it has a good prospect in the application of airborne adaptive array signal processing.

Keywords： signal processing　phasedar rays-radar　linear prediction　adaptive filters

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