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论文

任意相位编码信号及其脉压滤波器联合优化设计

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摘要：

针对具有任意相位的多相编码信号提出一种编码信号与脉压滤波器联合优化的设计方法．该方法采用凸优化求解现有相位编码信号在给定最大增益损失约束下的最小峰值旁瓣抑制相关器，从而构造一种新的相位编码信号，并通过多次迭代进一步降低其距离旁瓣．该方法在不增加脉压滤波器长度的情况下,以很小的增益损失为代价获得了接近理想的峰值旁瓣电平．和已有方法相比，该方法设计灵活和收敛性好．仿真结果验证了所提方法的有效性．

关键词： 波形设计 凸优化 增益控制 相关器

Optimal design method combined aribtary phase codes with pulse compression filters optimization

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Abstract:

For the polyphase codes with arbitray phase, an optimal design method combined with pulse compression filters is proposed. Under the constraint of the maximum gain loss, The minimum peak sidelobe suppression correlator for existing phase codes is given by convex optimization, on the basis of which, a novel phase code is presented. Its range sidelobe can be farther decreased by multi-iterative operations. Without increasing the length of pulse compression filters, a nearly optimal peak sidelobe level is achieved by the presented method at the cost of less loss in process gain. The presented algorithm has many advantages, such as flexible design and quick convergence. The validity of the presented method is demonstrated by simulation results.

Keywords: waveform design convex optimization gain control correlators

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