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Author: Ms. Ying Zhang
Beijing Aerospace Automatic Control Institute, China, 351687656@qq.com

Mr. hongxiang qi
China, qihx007@163.com

THE RESEARCH ON FOLDED LINEAR TURBO DECODER FOR LUNAR COMMUNICAITION

Abstract

The next few decades involve a dramatically increased interest in lunar exploration for the purpose of developing a permanent human and robotic presence on the moon, both for science and space exploration objectives. This renewed interest is broad and international, involving space communicaiton from all over the world. Adopting linear subsection, the folded linear Log-Map approach method is proposed for lunar communication in this paper. It not only ensures the Ber performance in the deepspace communication, but also gets good decoding capability close to Map and Log-MAP, and fast system operation like Max-Log-MAP. Experiment results illustrate that it gains a 0.35db coding improvement. Described with HDL, the timing simulation shows that systerm resources just increase 8% comparing with Max-Log-MAP. Systerm delay is the same as Max-Log-MAP. The decoder of folded linear scheme whose speed can get 25MHz is implemented successfully on the Virtex2 series of Xilinx, which is optimized for the market demands and providing better performance with up to date technologies.