

Joint iterative channel estimation and decoding under pulsed radio frequency interference condition

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Abstract— Pulsed Radio Frequency Interference (RFI) has severely effected on communication system in common. Even though Low-Density-Parity-Check (LDPC) code which has the decoding performance to approach the Shannon Limit and it is designed as a powerful forward-error-correction (FEC) code in the Additive White Gaussian Noise (AWGN) channel, simulation results show that the performance of LDPC decoder is degraded when exposed to the pulsed RFI. According to such a pulsed RFI impact, joint iterative channel estimation and decoding technique is proposed in this paper so as to decrease the effect of pulsed RFI while less complicated in processing. The proposed method decreases the complexity by implementing the simple way of SNR estimation and improves the efficiency and applying joint iterative technique between channel estimation and decoding. For optimal decoder performance, Signal-to-Noise Ratio (SNR) estimation must be as accurate as possible. Because computed in each time of iterative decoder, noise variance has been always change resulting in the performance of LDPC decoder has better in efficiency. The simulation results show that both less complexity and higher outcomes can be achieved by this proposed approach.

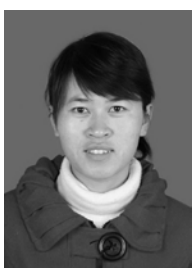
Keyword— LDPC decoding, Pulsed RFI, Pulsed RFI impact, Joint iterative, Channel estimation.



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