Computer Science > Information Theory

Indirect Channel Sensing for Cognitive Amplify-and-Forward Relay Networks

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In cognitive radio network the primary channel information is beneficial. But it can not be obtained by direct channel estimation in cognitive system as pervious methods. And only one possible way is the primary receiver broadcasts the primary channel information to the cognitive users, but it would require the modification of the primary receiver and additional precious spectrum resource. Cooperative communication is also a promising technique. And this paper introduces an indirect channel sensing method for the primary channel in cognitive amplify-and-forward (AF) relay network. As the signal retransmitted from the primary AF relay node includes channel effects, the cognitive radio can receive retransmitted signal from AF node, and then extract the channel information from them. Afterwards, Least squares channel estimation and sparse channel estimation can be used to address the dense and sparse multipath channels respectively. Numerical experiment demonstrates that the proposed indirect channel sensing method has an acceptable performance.

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