

## Cognitive Relaying in Interference Limited Spectrum Sharing Environment: Outage Probability and Outage Capacity

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**Abstract :** In this paper, we consider a cognitive relay network (CRN) in which the primary receiver (PR) is protected by peak transmit power  $\bar{P}_{ST}$  and/or peak interference power  $Q$  constraints. In addition, the interference effect from the primary transmitter (PT) is considered to show its impact on the performance of the CRN. We investigate the outage probability (OP) and outage capacity (OC) of the CRN by deriving closed-form expressions over Rayleigh fading channel. Results show that both the OP and OC improve by increasing the cooperative relay nodes as well as when the PT is far away from the SR.

**Keywords :** cognitive relay, outage, interference limited, decode-and-forward (DF)

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