

# Abstract

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## **Instantaneous Average Interference Antenna Selection for MISO Underlay Cognitive Radio with Rotated and Interleaved M-PSK**

The underlay cognitive radio that allows an unlicensed user to access the spectrum owned by the primary user even during its transmission but under tight interference constraint that protects the primary user which in the contrary affects the performance of the secondary one, is a very challenging investigation. We reduce the symbol error probability by improving the performance of the instantaneous average interference antenna Selection rule and increase the system diversity by using a rotated and interleaved M-PSK instead of conventional modulation scheme, while still benefiting from the spatial diversity of antenna Selection and maintaining an instantaneous average interference protection to the primary user. A Matlab simulation was performed to confirm and compare the instantaneous rule using rotated and interleaved M-PSK with the optimal symbol error probability antenna Selection rule that uses conventional M-PSK and the result obtained shows a significant improvement in the system performance regarding the reduction in the symbol error probability.