

MUSIC Spectrum Based Interference Detection and Localization for mmWave RIS-MIMO System

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Abstract— For millimeter wave (mmWave) MIMO system, the capacity can be largely improved using beamforming technology if the system can detect the interference signal and its location. This paper proposes a Multiple Signal Classification (MUSIC) spectrum based method to detect an interference occurrence and find the location of the interference source for mmWave reconfigurable intelligent surface (RIS)-MIMO system. The MUSIC method can estimate the arrival of angles (AoAs) from the available auto-correlation of the received signal by searching for peaks in the MUSIC spectrum. Therefore, MUSIC spectrum can be treated as the 'signature' of the transmit signals from different locations. This paper utilizes this property to detect the interference occurrence and find the interference location for RIS-MIMO system in a low-complexity way.

Keyword— mmWave MIMO, reconfigurable intelligent surface, interference detection, interference localization.



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