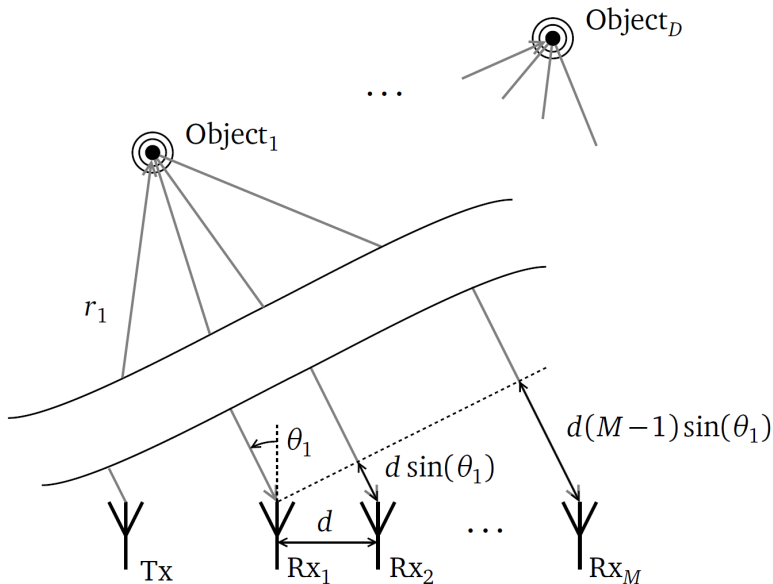


Subject: Array Signal Processing

**Research Focus/
Cross-sectional Area:** Communication systems (R9)



Description:

In array signal processing, a manifold of sensors is employed to produce observations of some measurable quantity. The type of signals measured by the array depends on the application for which it is designed. For example, sensor arrays have been used in fields such as radar, sonar, communications, radio astronomy, speech processing and medical diagnosis.

Two important estimation problems are source number and direction-of-arrival (DOA) estimation. While estimating the number of sources impinging on an array of sensors is a critical first step in a subsequent signal parameter estimation, DOA is one of the most fundamental tasks in array processing in order to find the spatial location of the impinging sources. Difficult scenarios are given by, e.g. impulsive noise, non-stationary source waveforms and small number of snapshots. Random matrix theory (RMT), robust statistics, as well as time-frequency analysis provide helpful tools to meet these challenges.

Requirements:

Good foundation in digital signal processing and statistics.

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