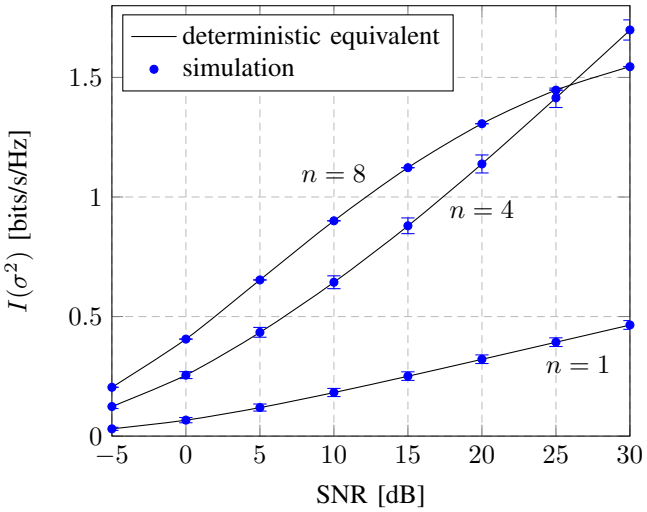


Fig. 1. Mutual information $I(\sigma^2)$ versus SNR for different numbers of transmit signatures n, $N = 16$, $N_i = 8$, $\mathbf{P}_i = \mathbf{I}_n$, $\alpha = 0.5$. Error bars represent one standard deviation on each side.

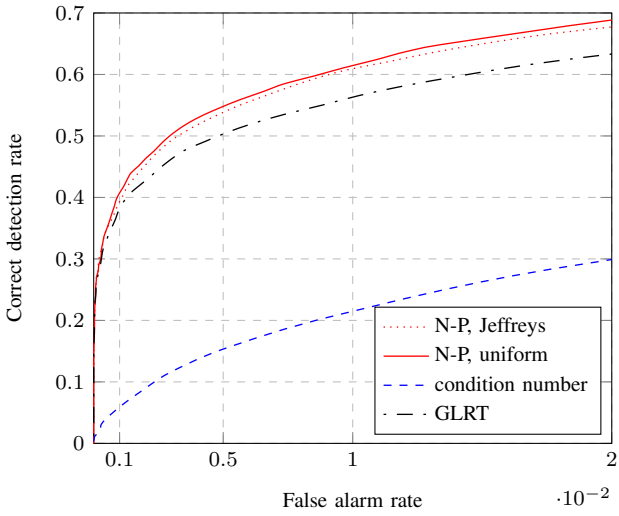


Fig. 2. ROC curve for a priori unknown σ^2 of the Neyman-Pearson test (N-P), condition number method and GLRT, $N = 4$, $M = 8$, $\mathsf{SNR} = 0$ dB, $\mathbf{h} \sim \mathcal{CN}(0, \mathbf{I}_N)$. For the Neyman-Pearson test, both uniform and Jeffreys prior, with exponent $\beta = 1$, are provided.

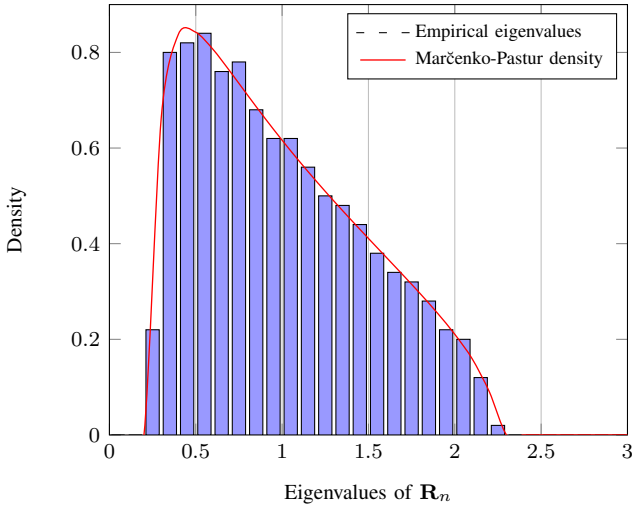
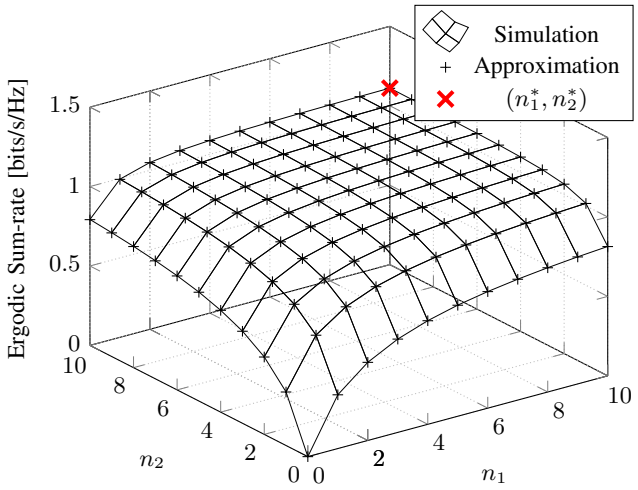
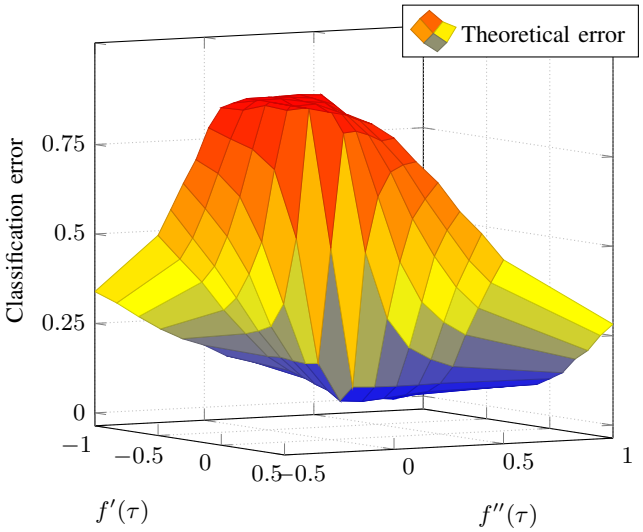
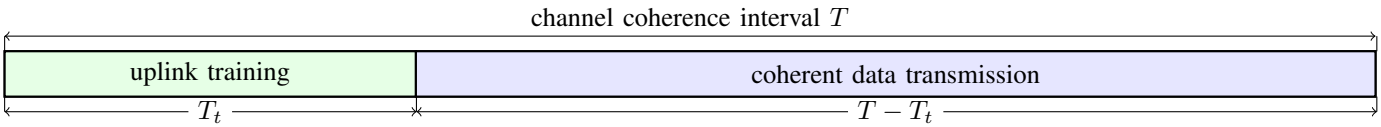
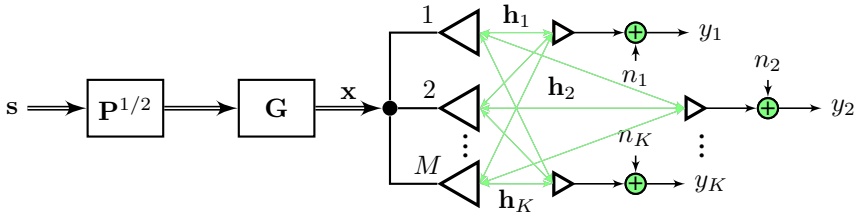


Fig. 3. Histogram of the eigenvalues of $\mathbf{R}_n = \frac{1}{n}\sum_{k=1}^{n} \mathbf{x}_k \mathbf{x}_k^*$, $\mathbf{x}_k \sim \mathcal{CN}(0, \mathbf{I}_N)$, for $n = 2000$, $N = 500$.


Simulation
Approximation
(n_1^*, n_2^*)
Ergodic Sum-rate [bits/s/Hz]
1.5
1
0.5
0
10
8
6
4
2
0
n_2
0
2
4
6
8
10
n_1


Theoretical error
Classification error
0.75
0.5
0.25
0
−1
−0.5
0
0.5
$f'(\tau)$
−0.5
0
0.5
1
$f''(\tau)$


channel coherence interval T
uplink training
coherent data transmission
T_t
$T - T_t$


s
$\mathbf{P}^{1/2}$
G
x
1
2
M
$\mathbf{h}_1$
$\mathbf{h}_2$
$\mathbf{h}_K$
y_1
y_2
y_K
n_1
n_2
n_K