Chapter 1

Sensing matrix = identity

1.1 Sparse Recovery

1.1.1 Sparsity = 50%

SNR = 20dB:

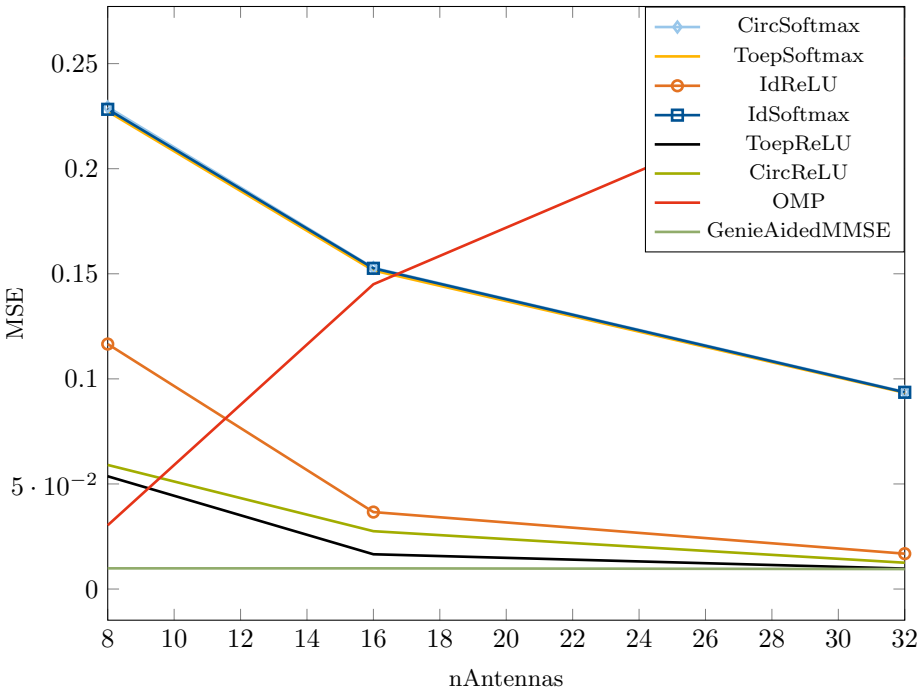

Figure 1.1: MSE with Sparse Recovery SNR = 10dB

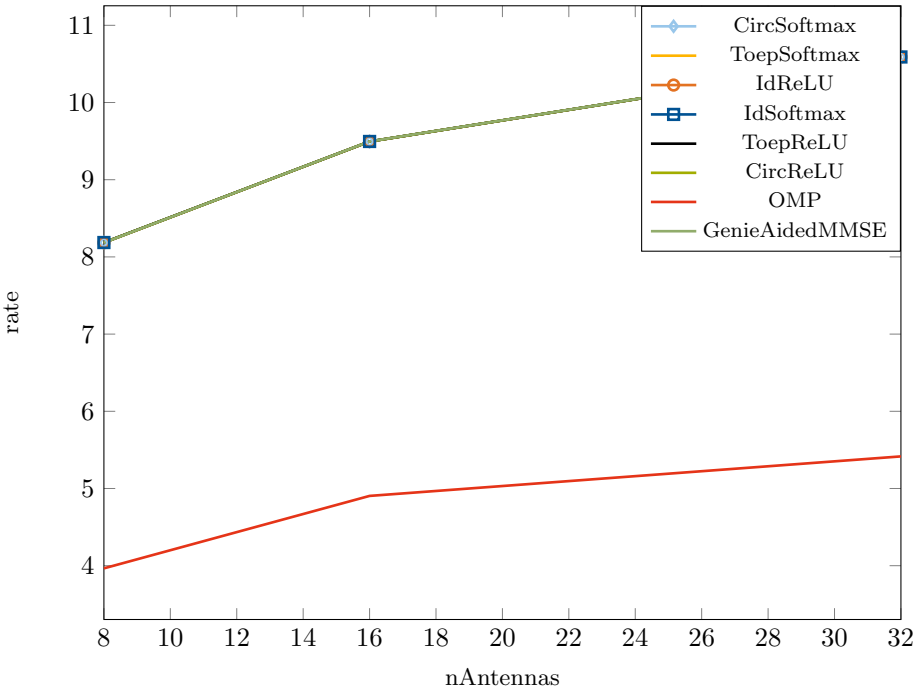

Figure 1.2: Rates with Sparse Recovery SNR = 10dB

1.1.2 Sparsity = 25%

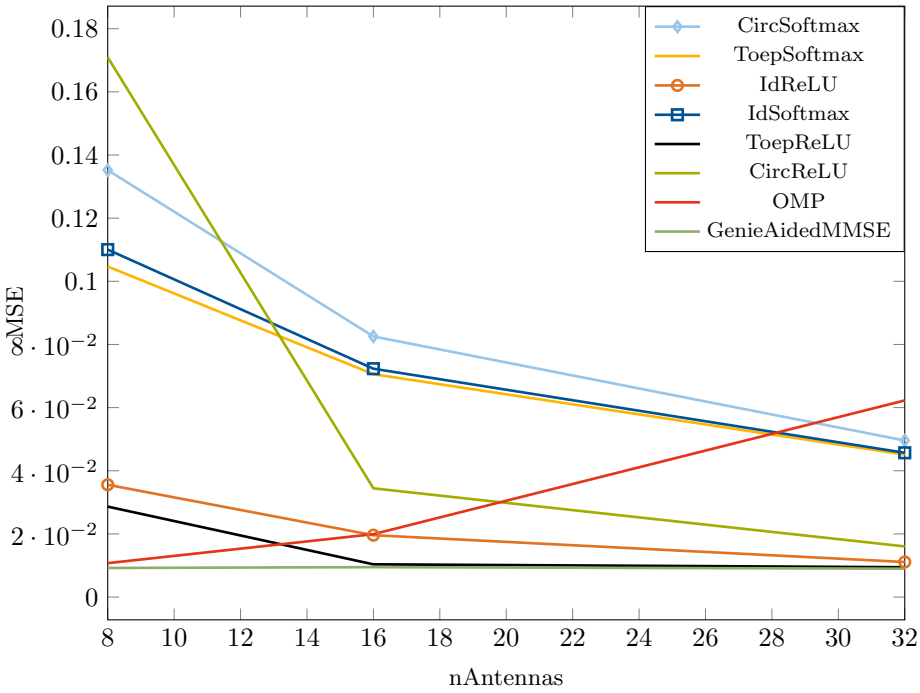

Figure 1.3: MSE with Sparse Recovery SNR = 20dB

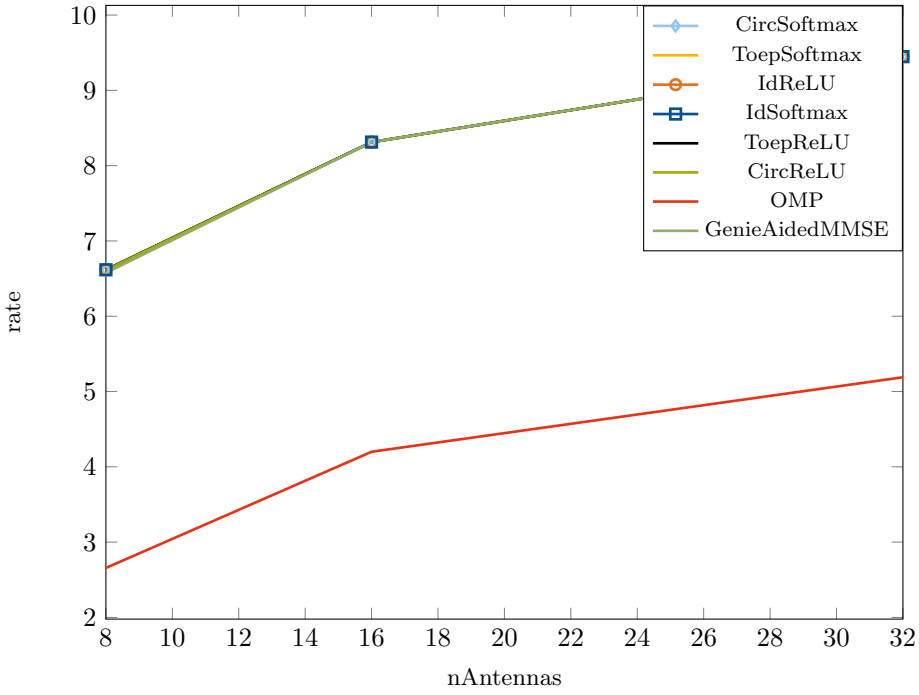

Figure 1.4: Rates with Sparse Recovery SNR = 20dB

1.2 Sparsity Tests

Sparsity = 25%, 32 antennas

1.2.1 Sparsity = 25%

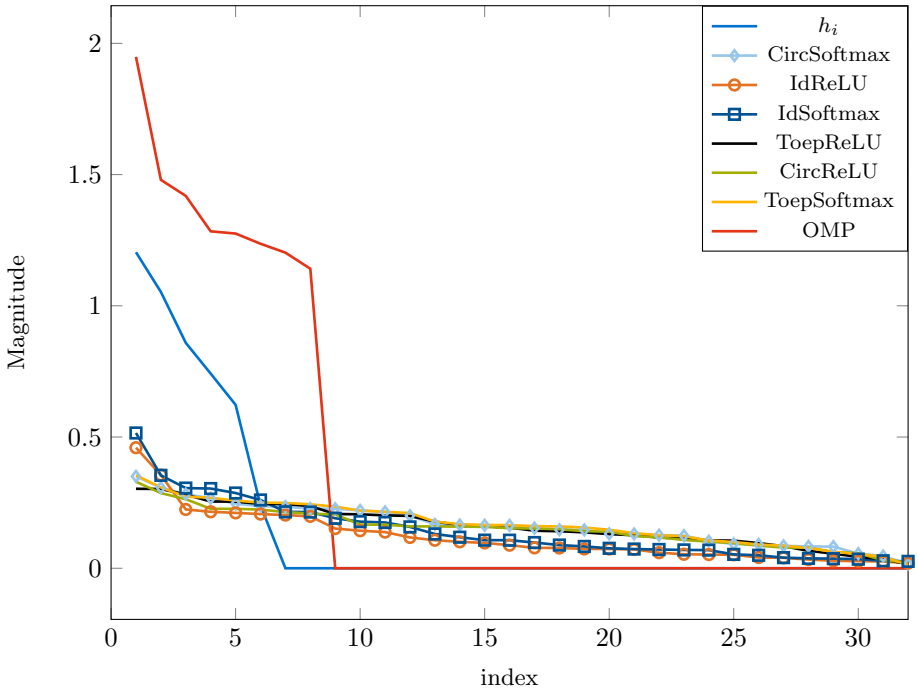

Figure 1.5: Comparison of input and output with CNN with 8000 samples and SNR = 0dB

1.3 MSE = f(SNR)

Sparsity = 25%

1.4 MSE = f(sparsity)

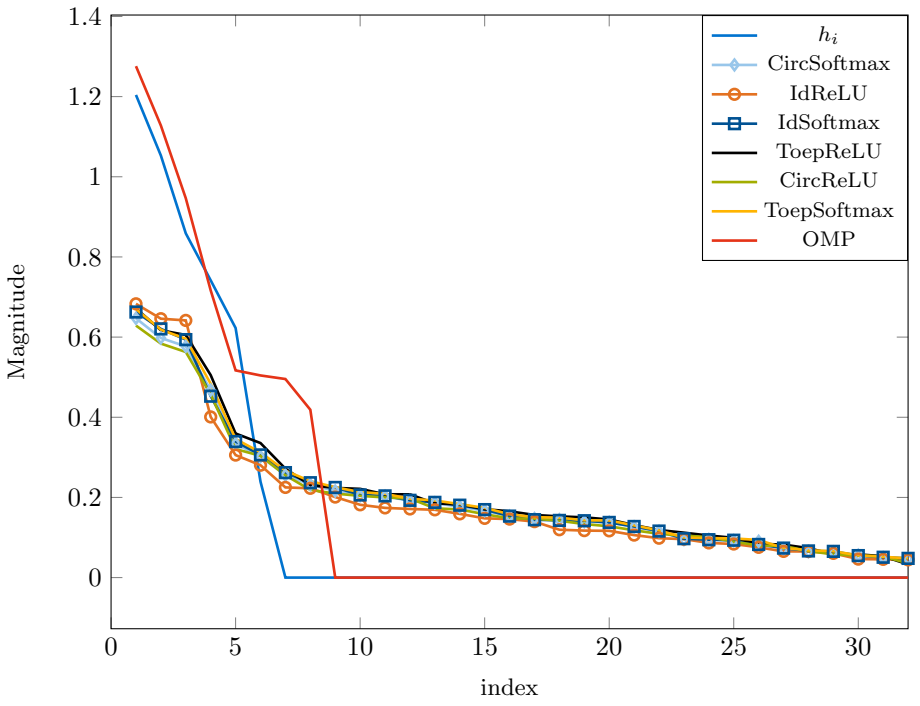

Figure 1.6: Comparison of input and output with CNN with 8000 samples and SNR = 10dB

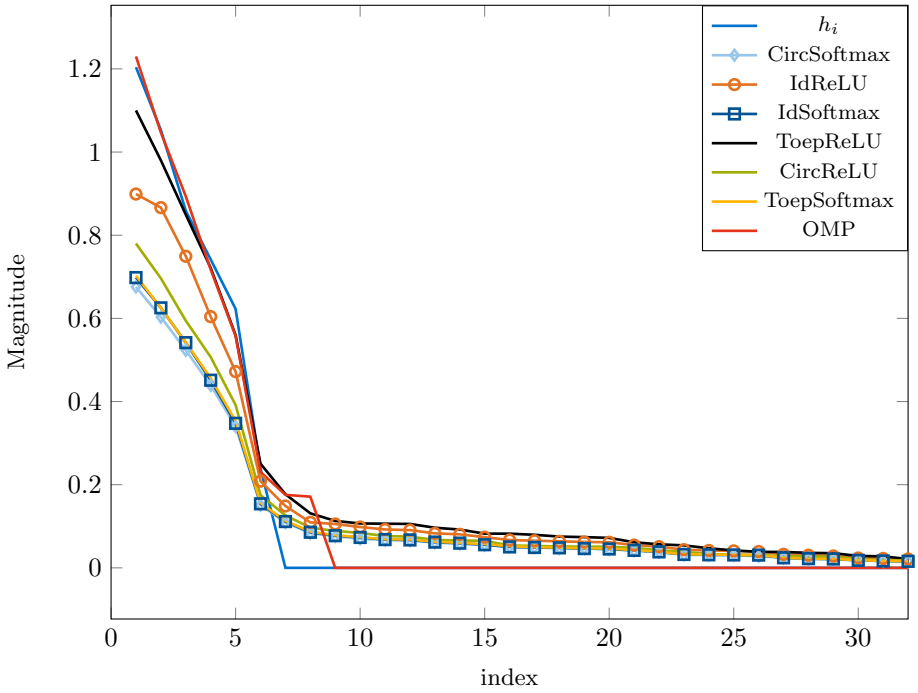

Figure 1.7: Comparison of input and output with CNN with 8000 samples and SNR = 20dB

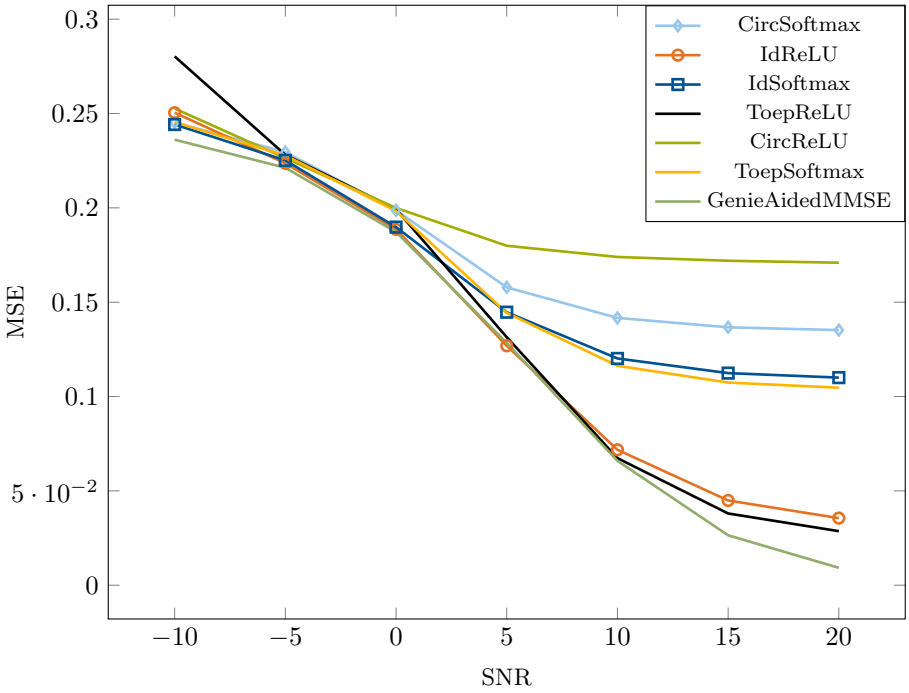

Figure 1.8: 8 antennas

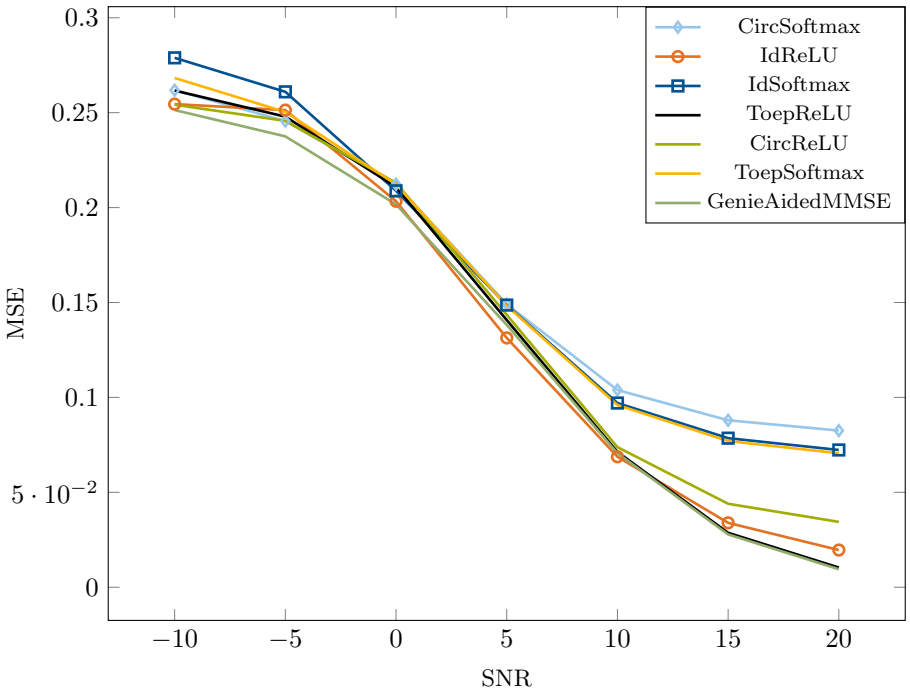

Figure 1.9: 16 antennas

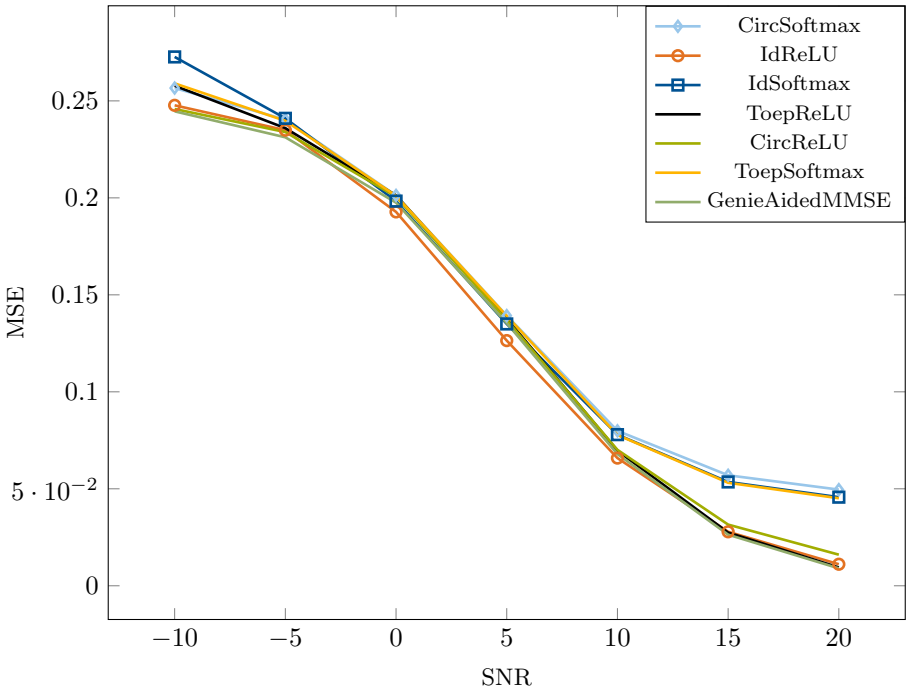

Figure 1.10: 32 antennas

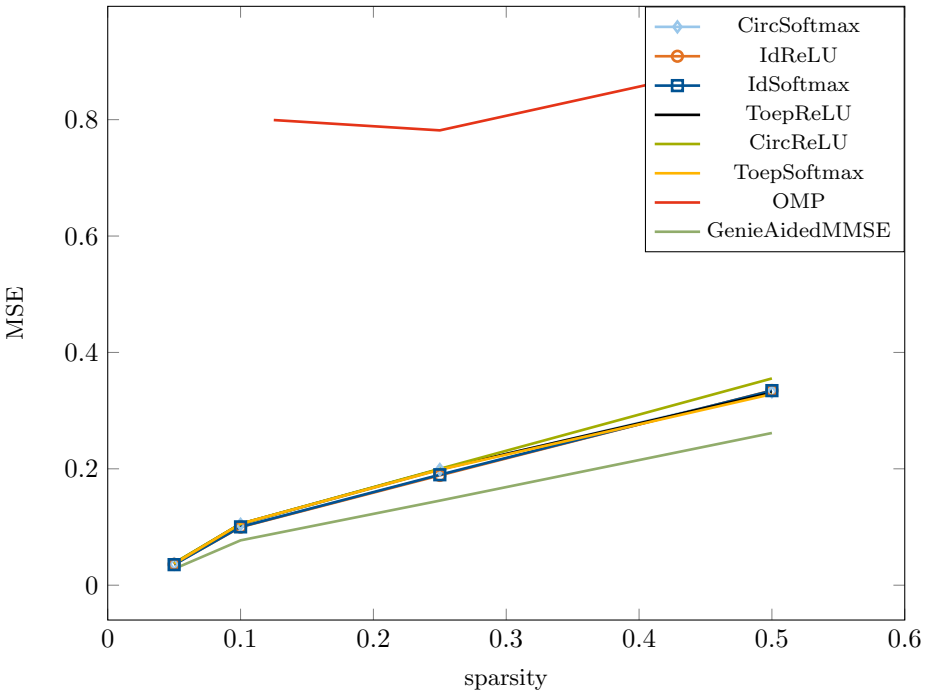

Figure 1.11: 8 antennas

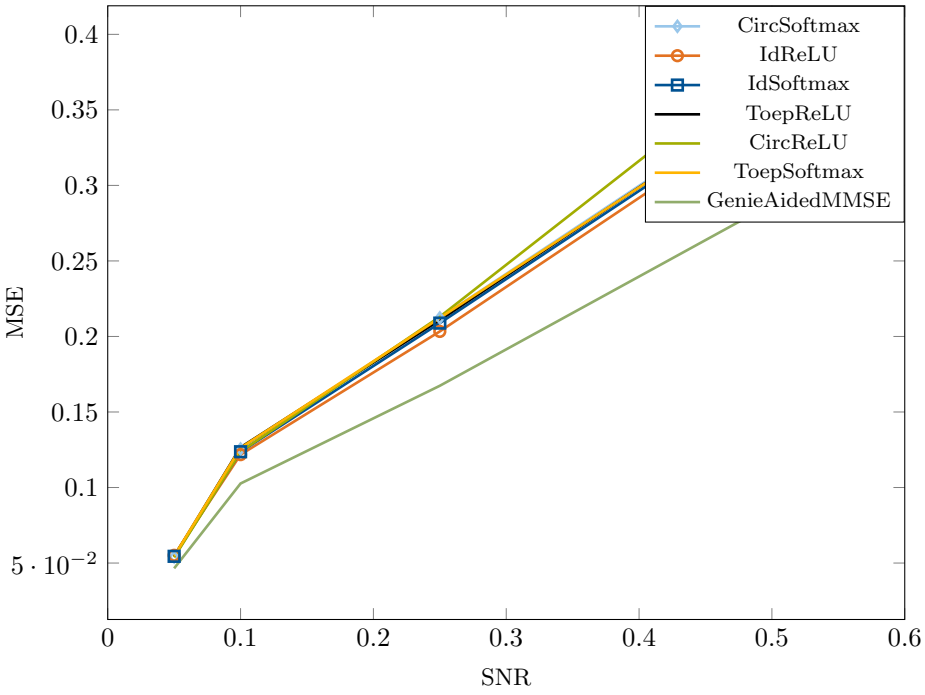

Figure 1.12: 16 antennas

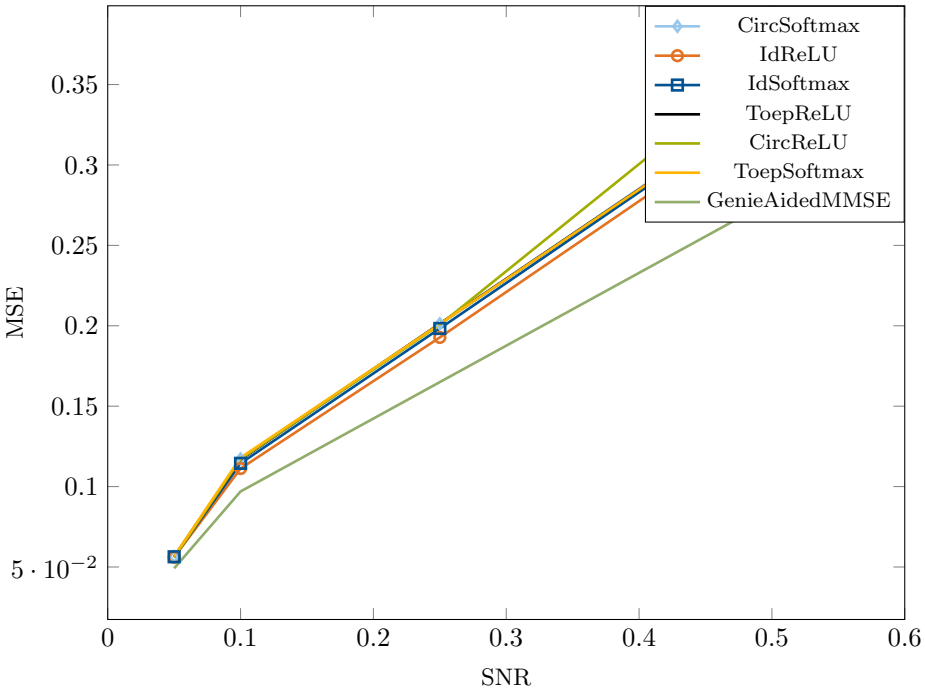

Figure 1.13: 32 antennas

Chapter 2

Sensing matrix = $e^{j}\phi$

2.1 Sparse Recovery with 25% sparsity

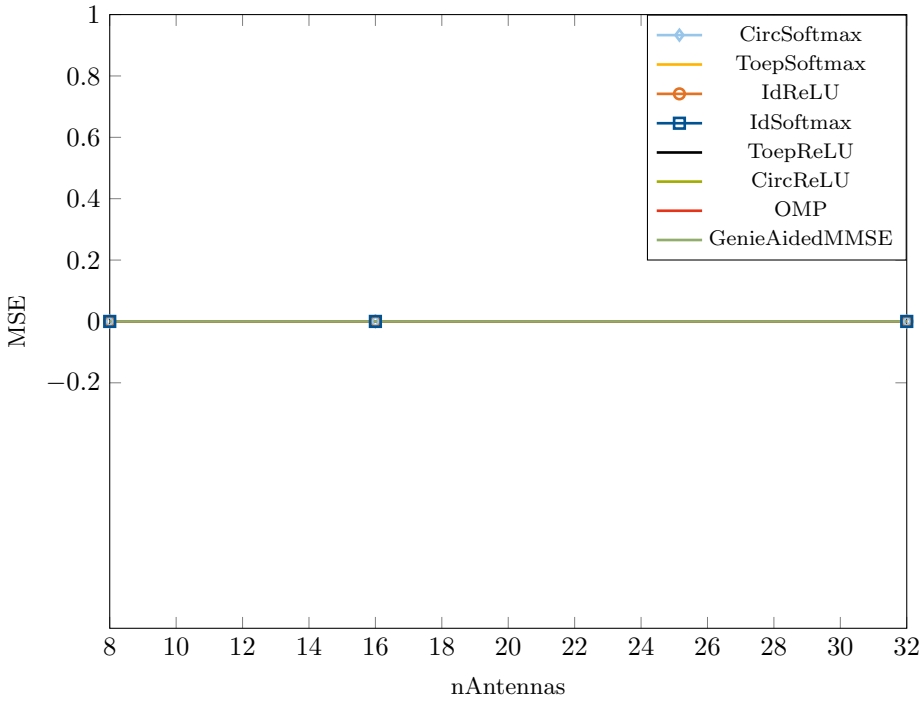

Figure 2.1: MSE with Sparse Recovery SNR = 20dB

Table 2.1: Simulation parameters

SNR	0/10/20
nLearningBatches	8000
nLearningBatchSize	50
sparsity	25%
nBatches	200
nBatchSize	50

Table 2.2: Testing parameters

Number of samples	6000
Number of antennas	32