I. Sparse Recovery

A. *Sparsity = 4*

Sparsity = 4, SNR = 0dB:

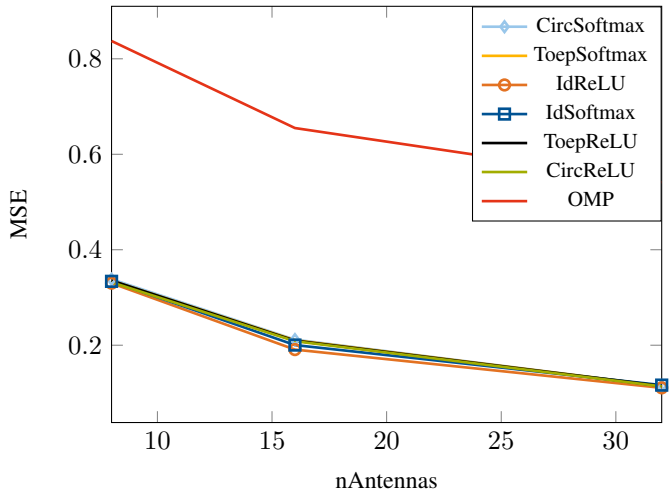

Fig. 1: MSE with Sparse Recovery SNR = 0dB

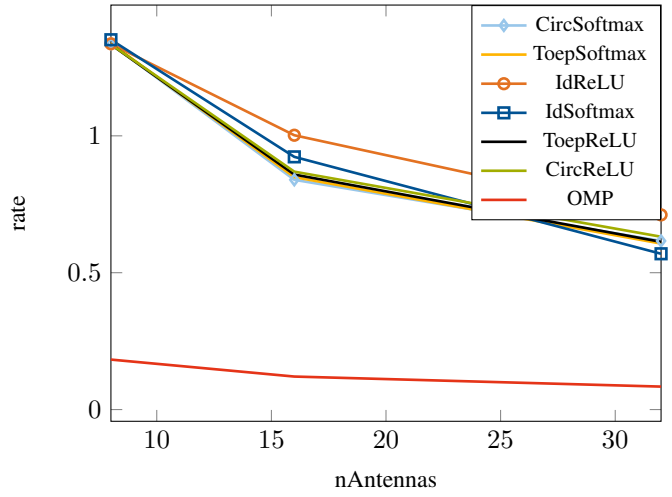

Fig. 2: Rates with Sparse Recovery SNR = 0dB

Sparsity = 4, SNR = 10dB:

Sparsity = 4, SNR = 20dB:

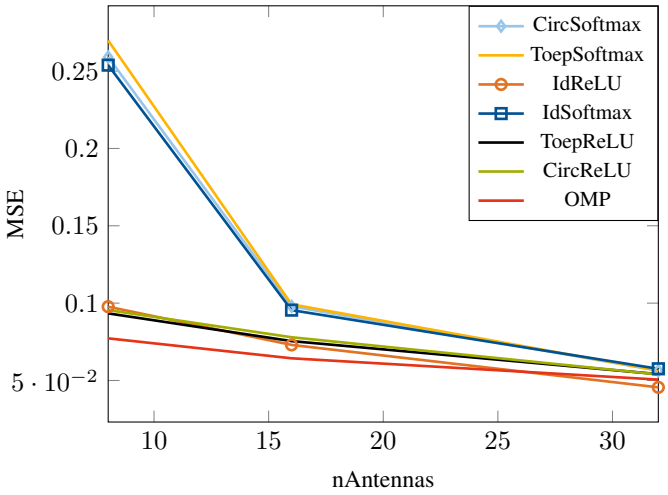

Fig. 3: MSE with Sparse Recovery SNR = 10dB

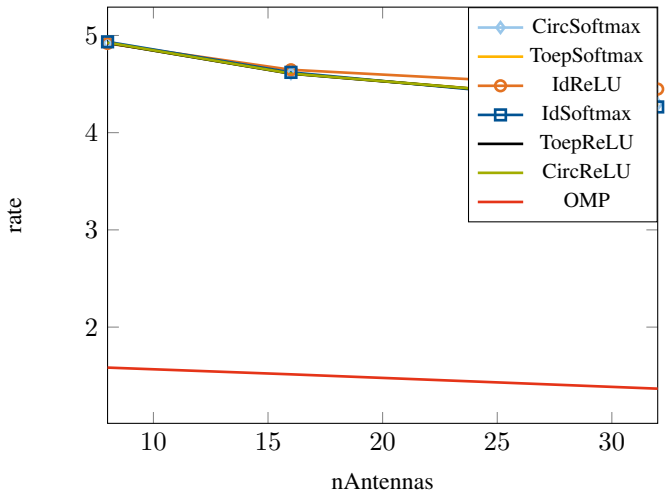

Fig. 4: Rates with Sparse Recovery SNR = 10dB

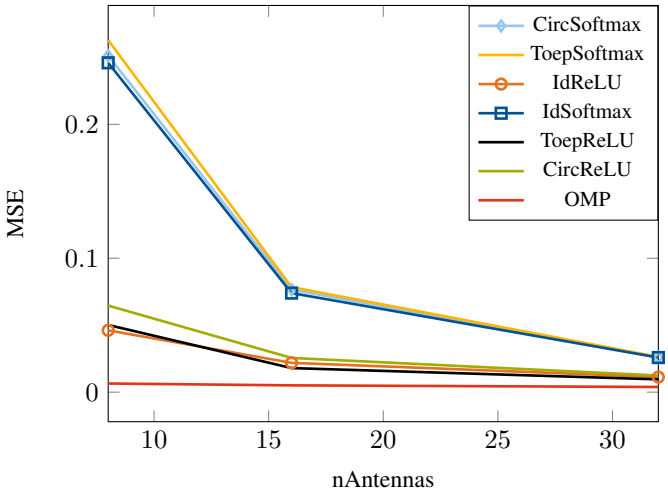

Fig. 5: MSE with Sparse Recovery SNR = 20dB

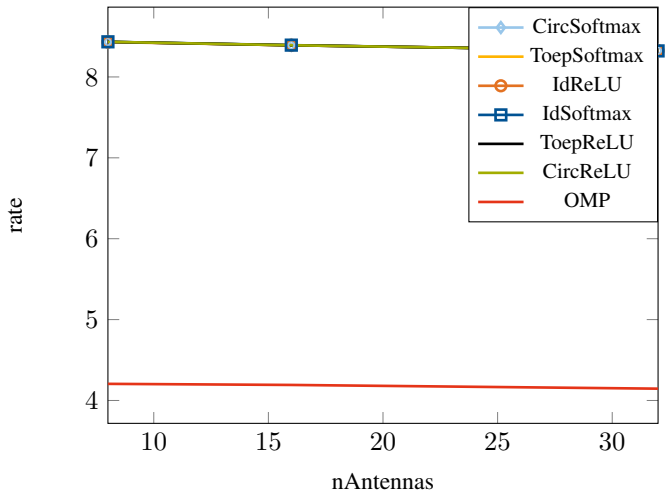

Fig. 6: Rates with Sparse Recovery SNR = 20dB

B. *Sparsity = 5*

Sparsity = 5, SNR = 0dB

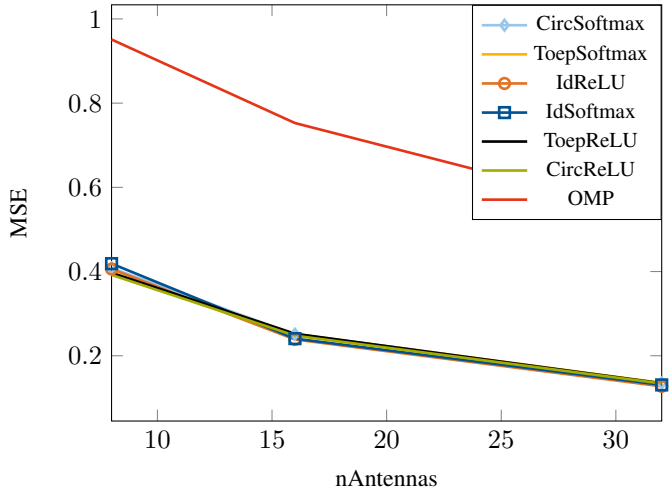

Fig. 7: MSE with Sparse Recovery SNR = 0dB

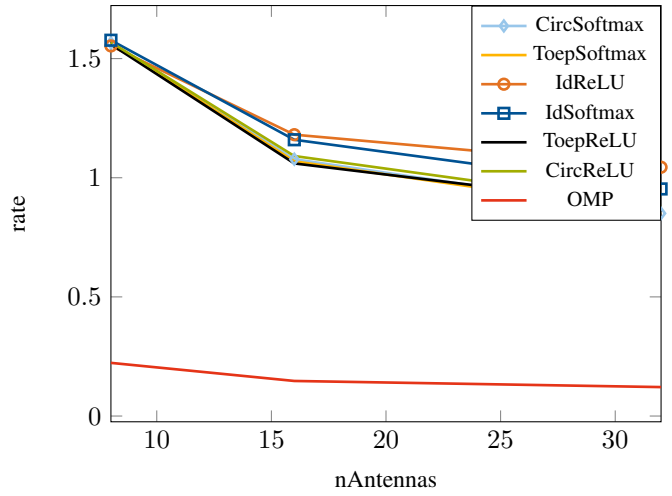

Fig. 8: Rates with Sparse Recovery SNR = 0dB

Sparsity = 5, SNR = 10dB

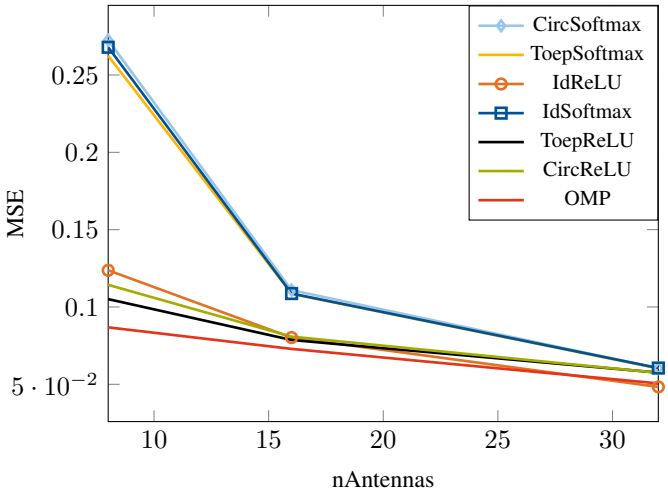

Fig. 9: MSE with Sparse Recovery SNR = 10dB

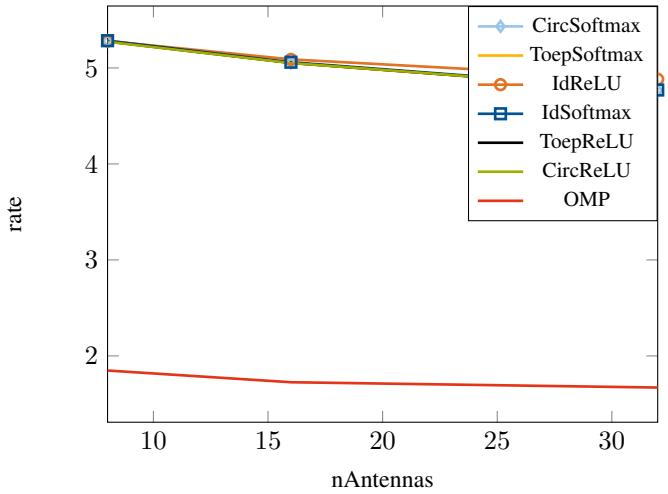

Fig. 10: Rates with Sparse Recovery SNR = 10dB

C. *Sparsity = 6*

Sparsity = 6, SNR = 0dB

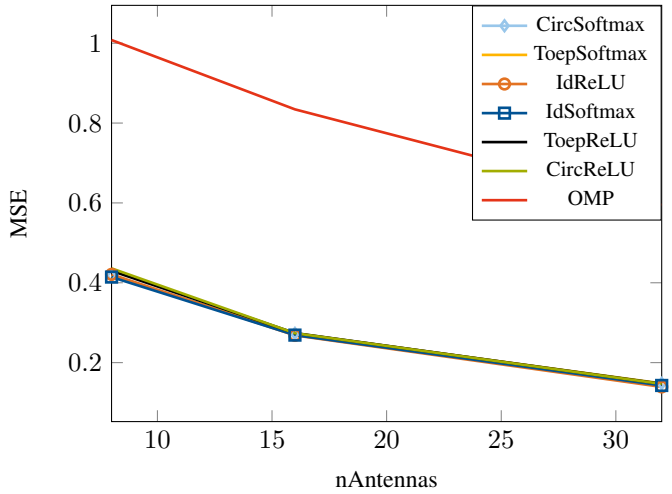

Fig. 11: MSE with Sparse Recovery SNR = 0dB

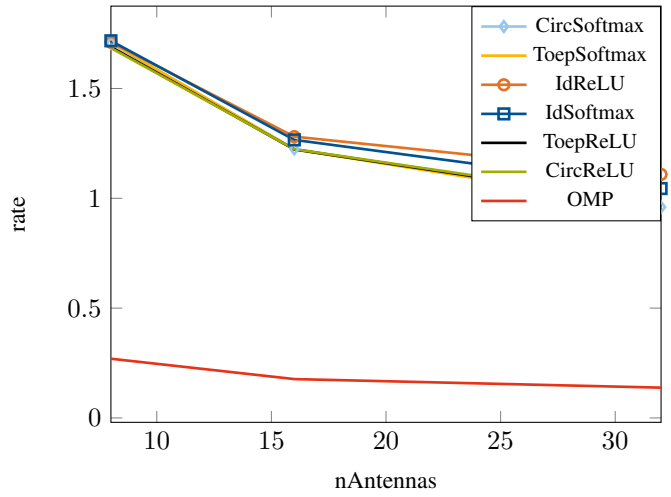

Fig. 12: Rates with Sparse Recovery SNR = 0dB

Sparsity = 6, SNR = 20dB

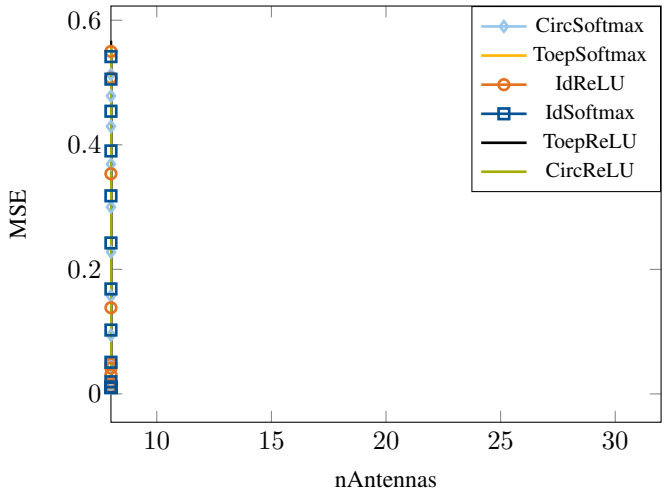

Fig. 13: MSE with Sparse Recovery SNR = 20dB

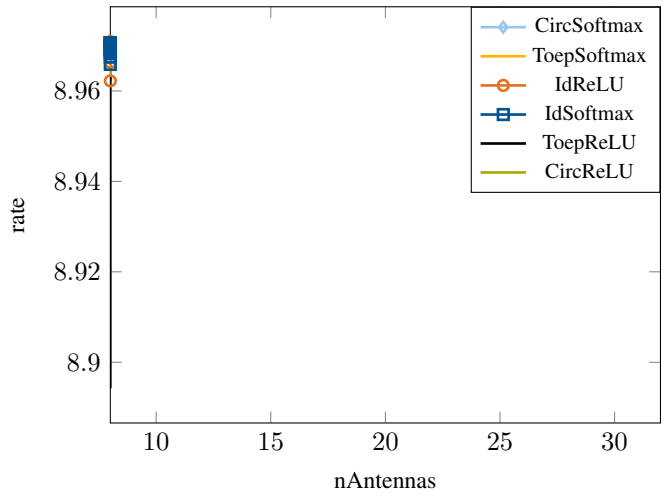

Fig. 14: Rates with Sparse Recovery SNR = 20dB

II. Sparsity Tests

A. *Sparsity = 4*

Sparsity = 4, SNR = 0/10/20dB

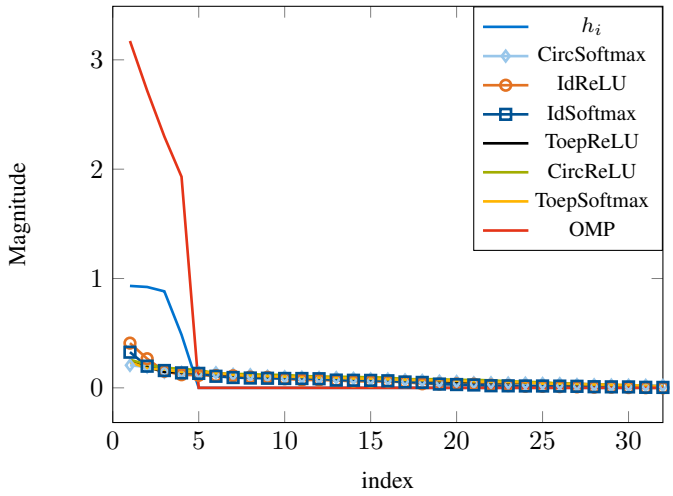

Fig. 15: Comparison of input and output with CNN with 8000 samples and SNR = 0dB

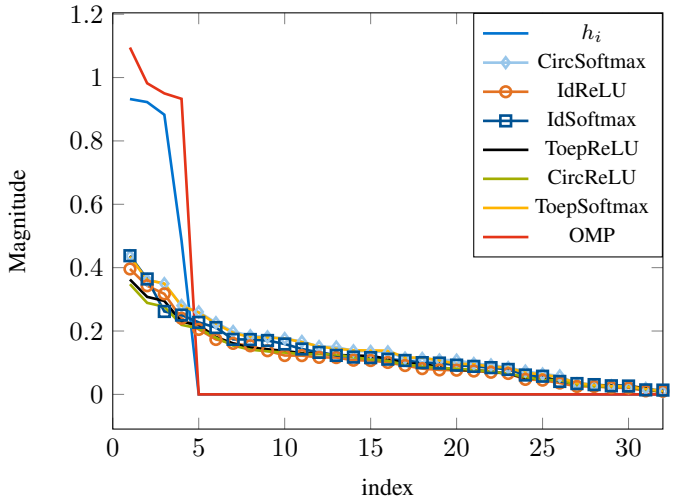

Fig. 16: Comparison of input and output with CNN with 8000 samples and SNR = 10dB

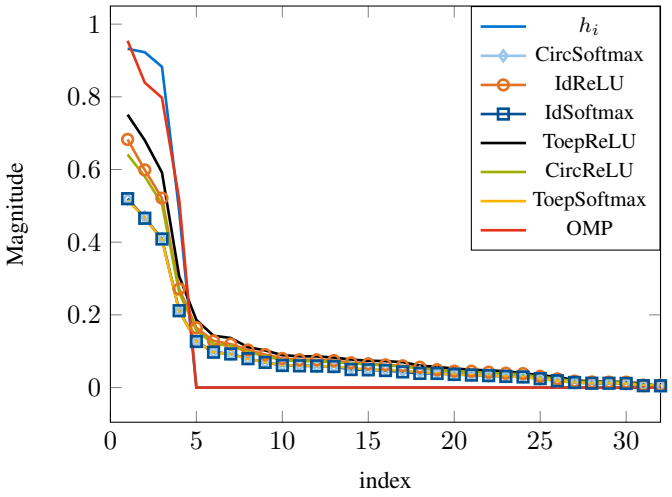

Fig. 17: Comparison of input and output with CNN with 8000 samples and SNR = 20dB

B. Sparsity = 5

Sparsity = 5, SNR = 0/10/20dB

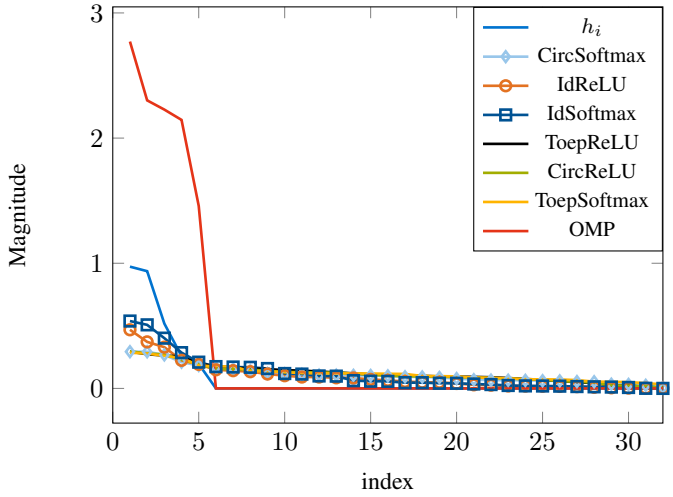

Fig. 18: Comparison of input and output with CNN and OMP with 8000 samples and SNR = 0dB

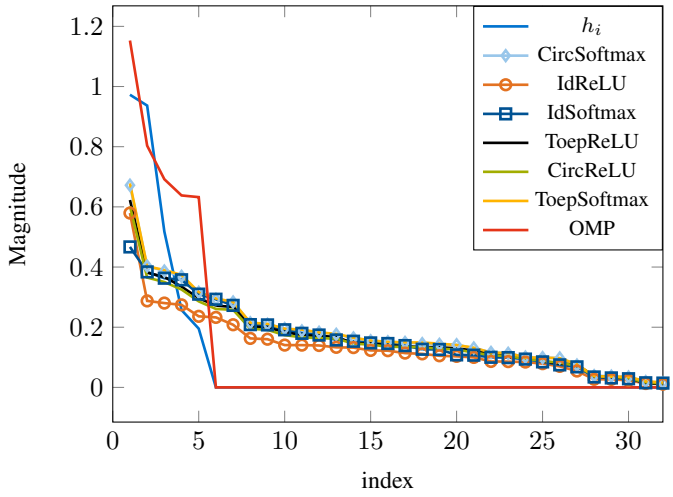

Fig. 19: Comparison of input and output with CNN and OMP with 8000 samples and SNR = 10dB

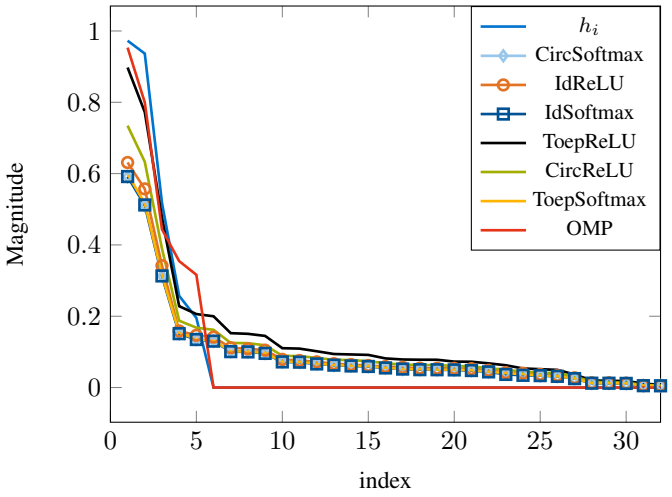

Fig. 20: Comparison of input and output with CNN and OMP with 8000 samples and SNR = 20dB

C. *Sparsity = 6*

Sparsity = 6, SNR = 0/10/20dB

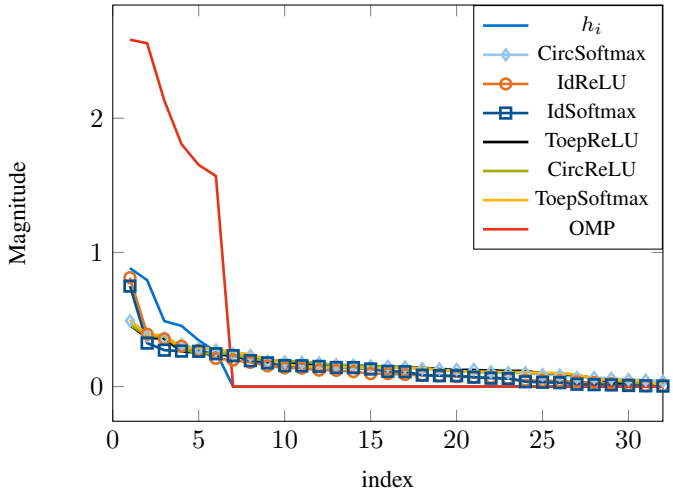

Fig. 21: Comparison of input and output with CNN and OMP with 8000 samples and SNR = 0dB and sparsity 6

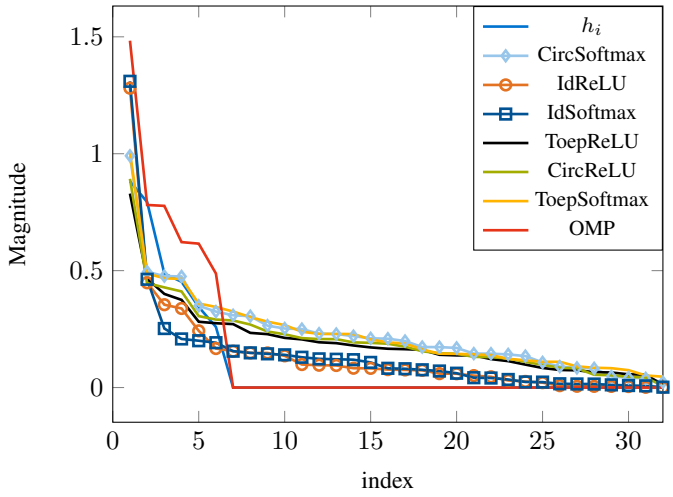

Fig. 22: Comparison of input and output with CNN and OMP with 8000 samples and SNR = 10dB and sparsity 6

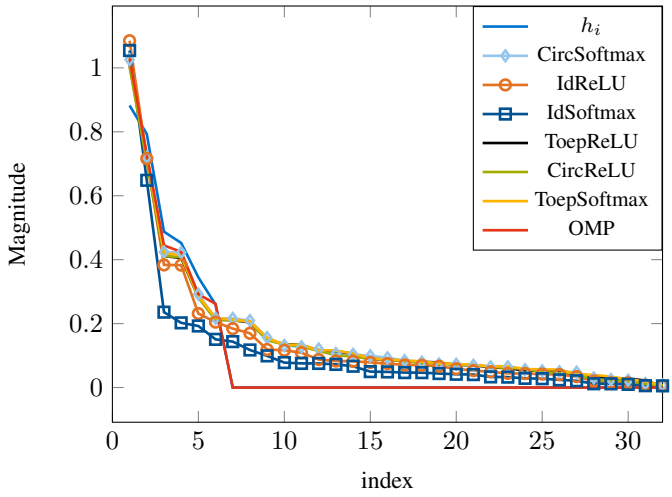

Fig. 23: Comparison of input and output with CNN and OMP with 8000 samples and SNR = 20dB and sparsity 6

III. Learning Curves

A. 8 antennas

Sparsity = 6, 8 antennas

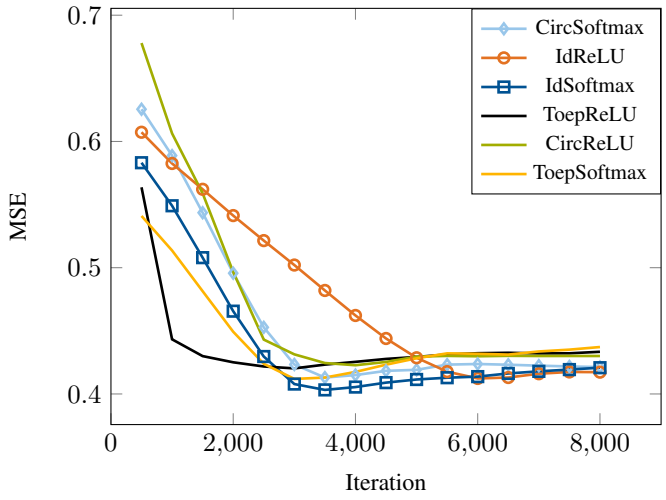

Fig. 24: Learning curve for 8 antennas with 6000 iterations and SNR = 0dB

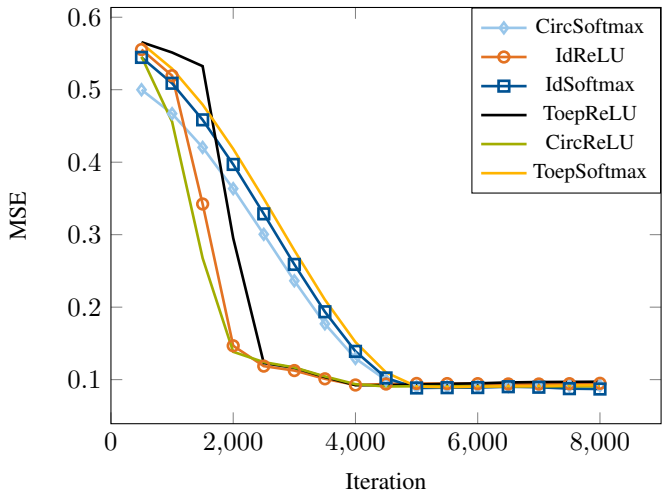

Fig. 25: Learning curve for 8 antennas with 6000 iterations and SNR = 10dB

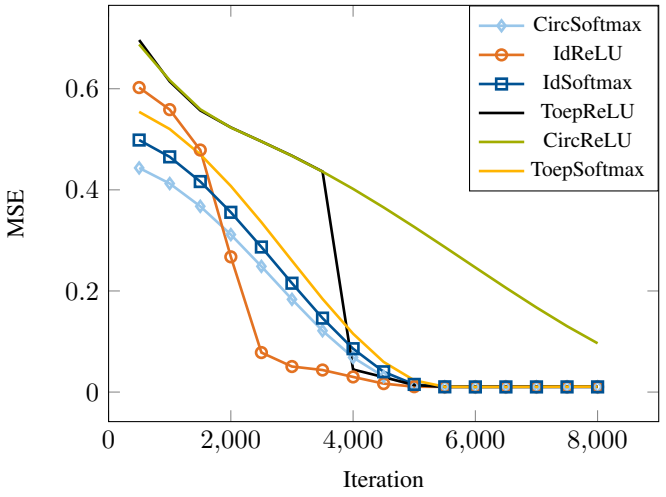

Fig. 26: Learning curve for 8 antennas with 6000 iterations and SNR = 20dB

B. 16 antennas

Sparsity = 6,16 anetnnas

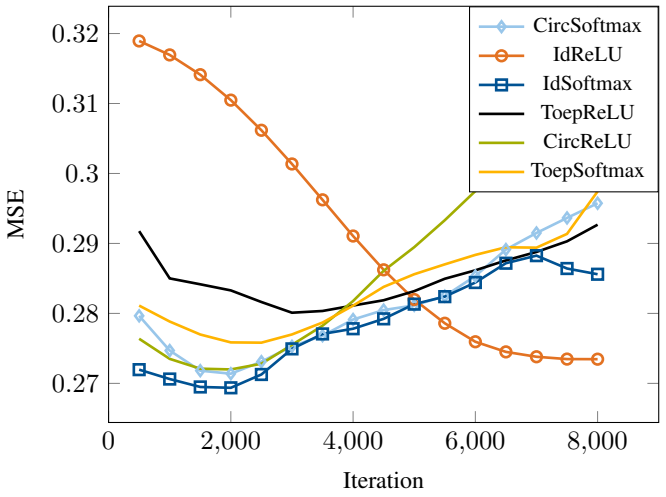

Fig. 27: Learning curve for 16 antennas with 6000 iterations and SNR = 0dB

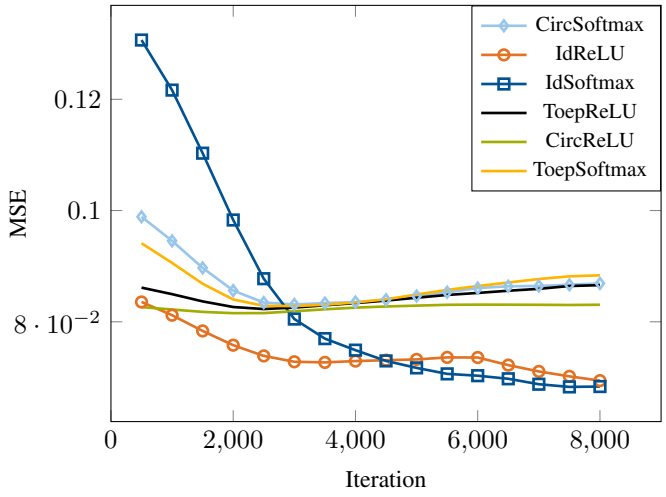

Fig. 28: Learning curve for 16 antennas with 6000 iterations and SNR = 10dB

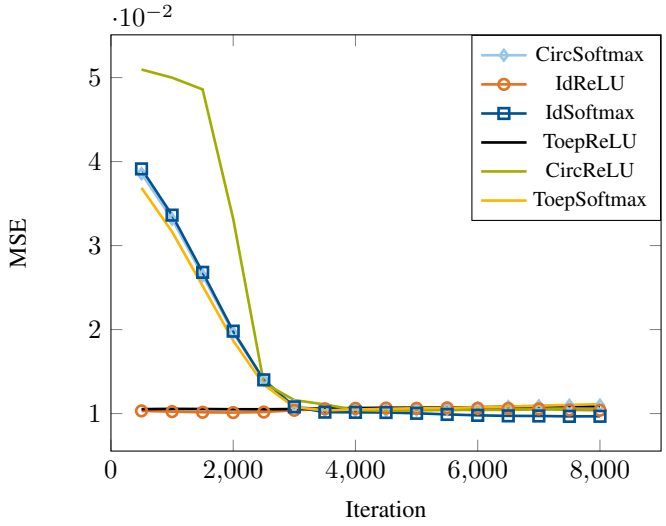

Fig. 29: Learning curve for 16 antennas with 6000 iterations and SNR = 20dB

C. 32 antennas

Sparsity = 6, 32 anetnnas

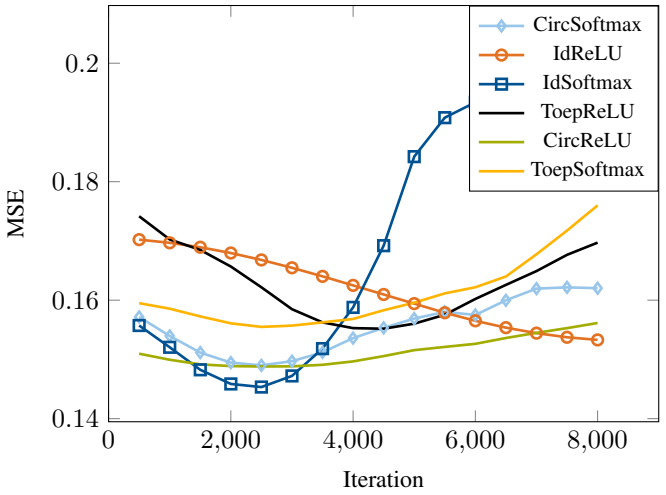

Fig. 30: Learning curve for 32 antennas with 6000 iterations and SNR = 0dB

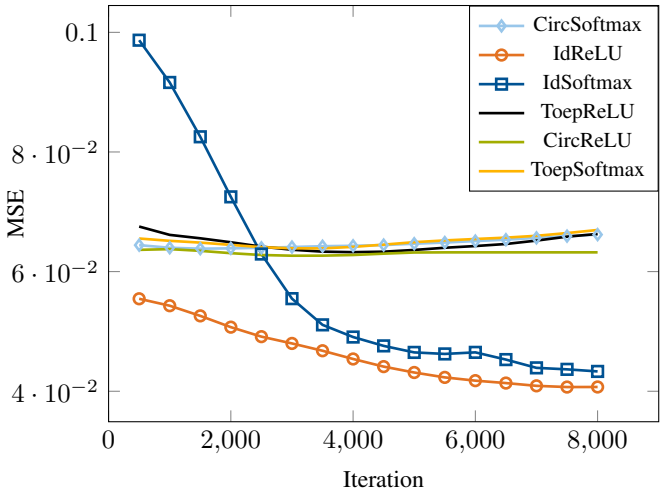

Fig. 31: Learning curve for 32 antennas with 6000 iterations and SNR = 10dB

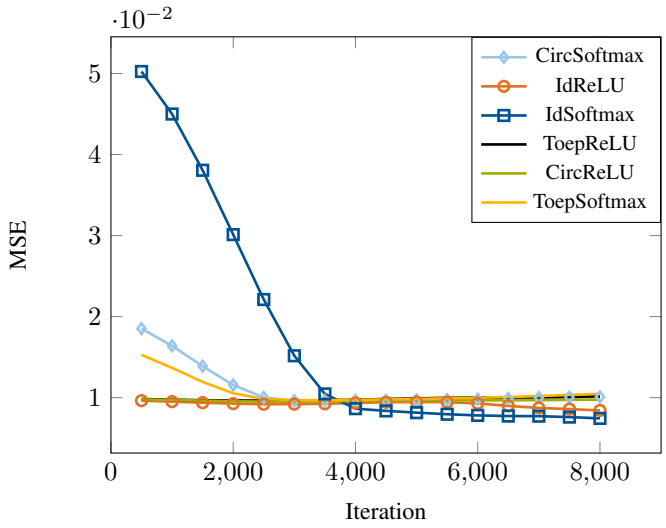

Fig. 32: Learning curve for 32 antennas with 6000 iterations and SNR = 20dB

TABLE I: Simulation parameters

SNR	0/10/20
nLearningBatches	8000
nLearningBatchSize	50
sparsity	4/5/6
nBatches	200
nBatchSize	50

TABLE II: Testing parameters

Number of samples	6000
Number of antennas	32