I. Sparse Recovery

A. *Sparsity = 4*

Sparsity = 4, SNR = 0dB:

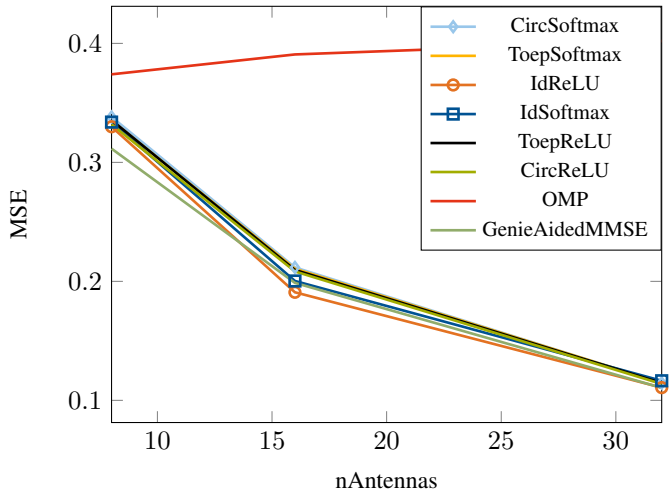

Fig. 1. MSE with Sparse Recovery SNR = 0dB

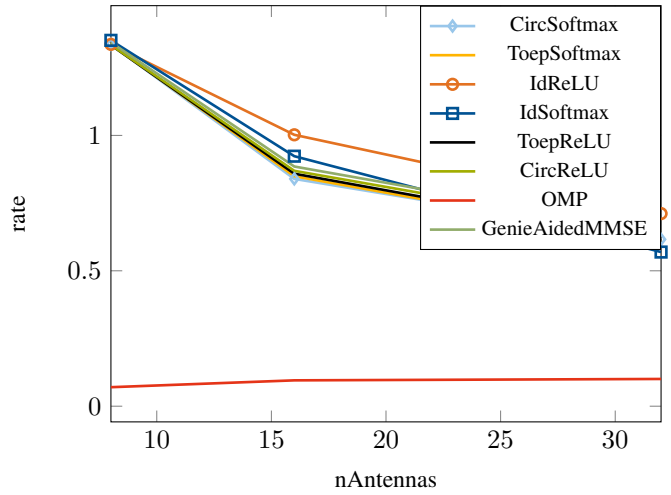

Fig. 2. Rates with Sparse Recovery SNR = 0dB

Sparsity = 4, SNR = 10dB:

Sparsity = 4, SNR = 20dB:

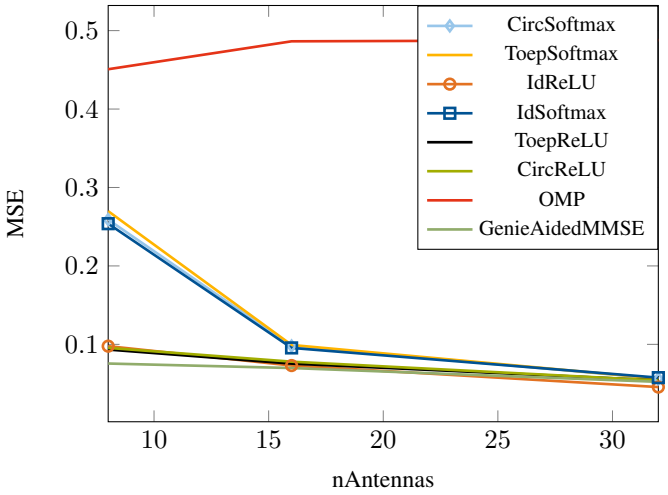

Fig. 3. MSE with Sparse Recovery SNR = 10dB

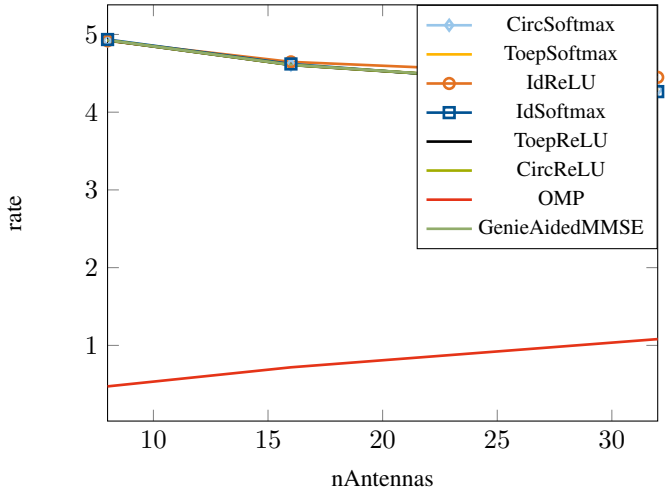

Fig. 4. Rates with Sparse Recovery SNR = 10dB

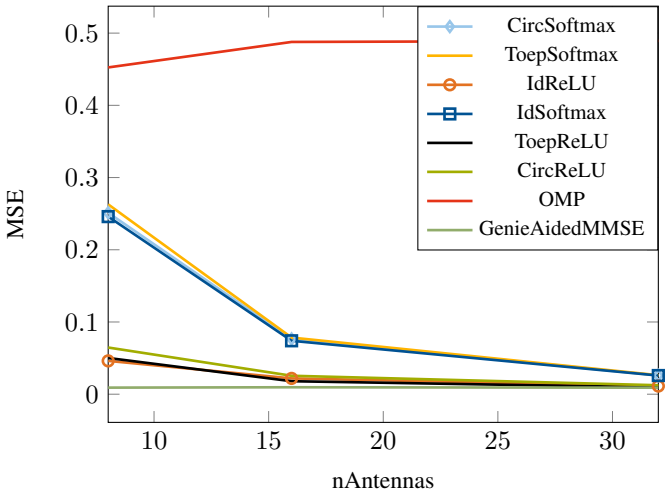

Fig. 5. MSE with Sparse Recovery SNR = 20dB

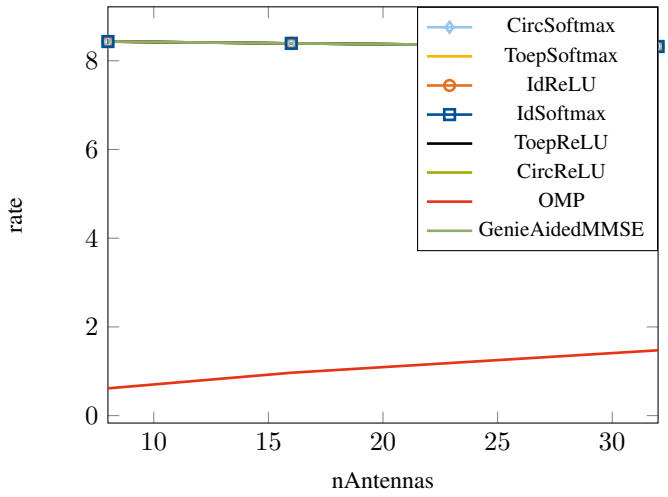

Fig. 6. Rates with Sparse Recovery SNR = 20dB

II. Sparsity Tests

A. 8 antennas

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

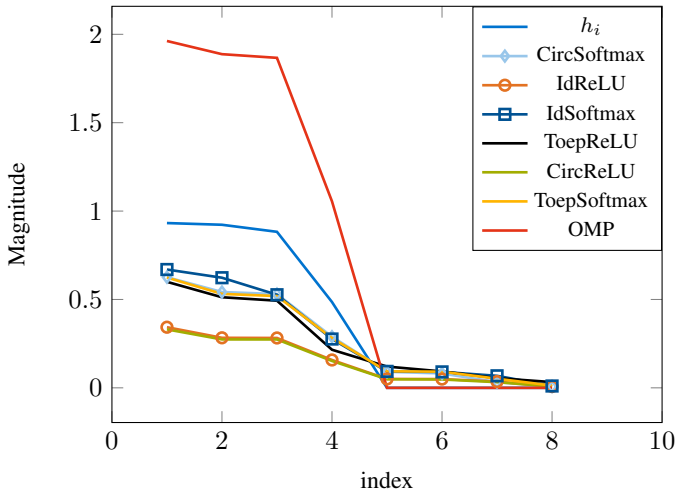

Fig. 7. Comparison of input and output with CNN with 8000 samples and SNR = 0dB

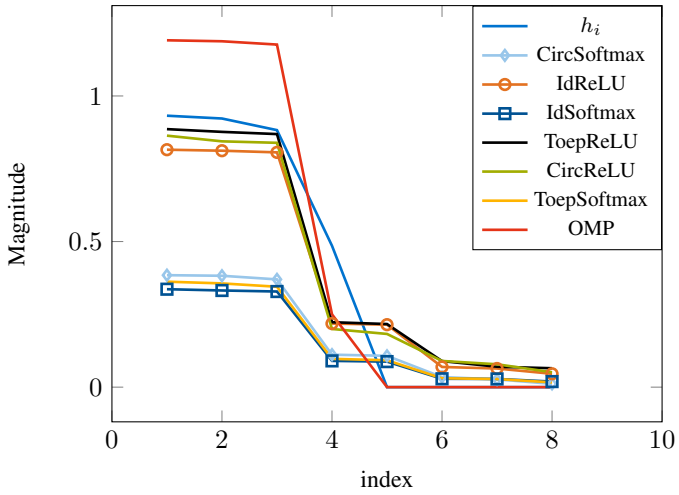

Fig. 8. Comparison of input and output with CNN with 8000 samples and SNR = 10dB

B. 16 antennas

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

C. 32 antennas

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

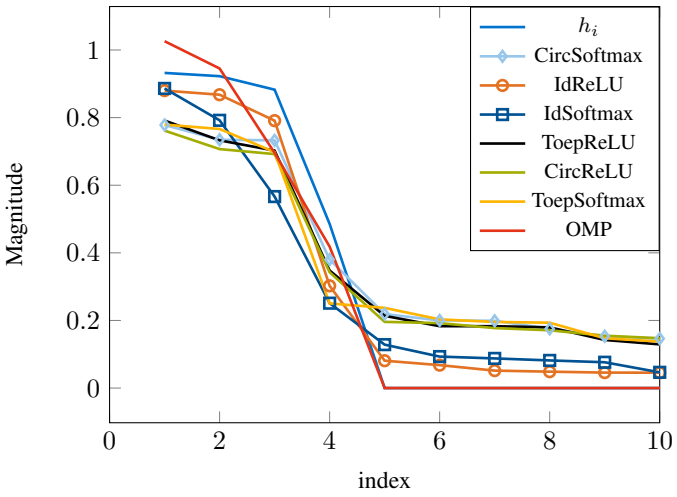

Fig. 9. Comparison of input and output with CNN with 8000 samples and SNR = 20dB

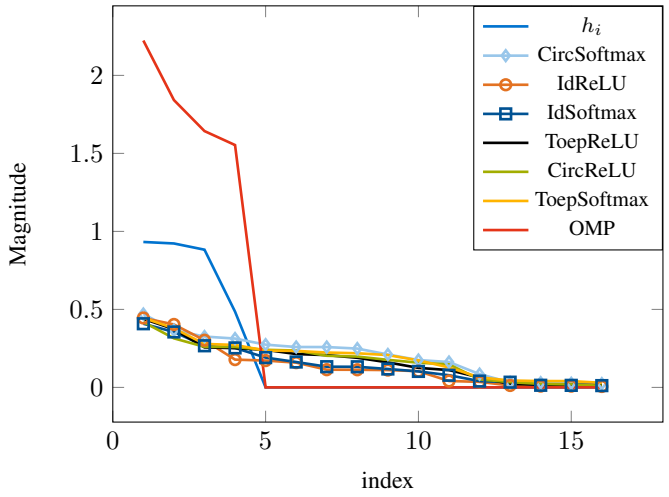

Fig. 10. Comparison of input and output with CNN with 8000 samples and SNR = 0dB

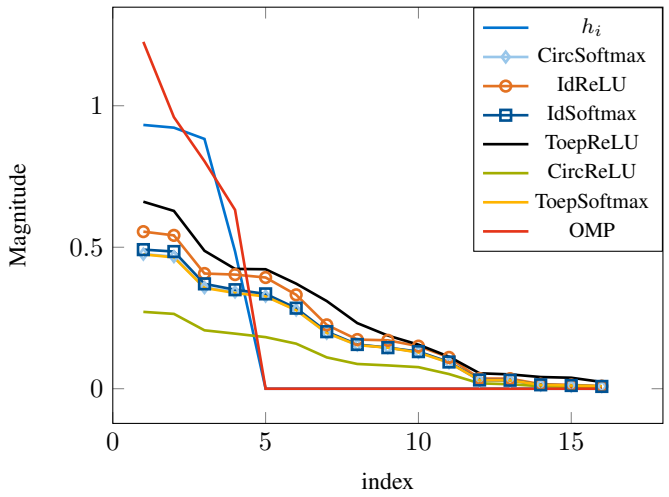

Fig. 11. Comparison of input and output with CNN with 8000 samples and SNR = 10dB

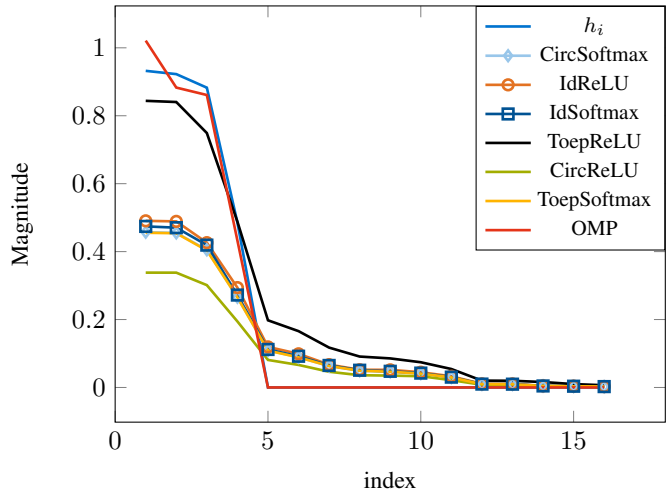

Fig. 12. Comparison of input and output with CNN with 8000 samples and SNR = 20dB

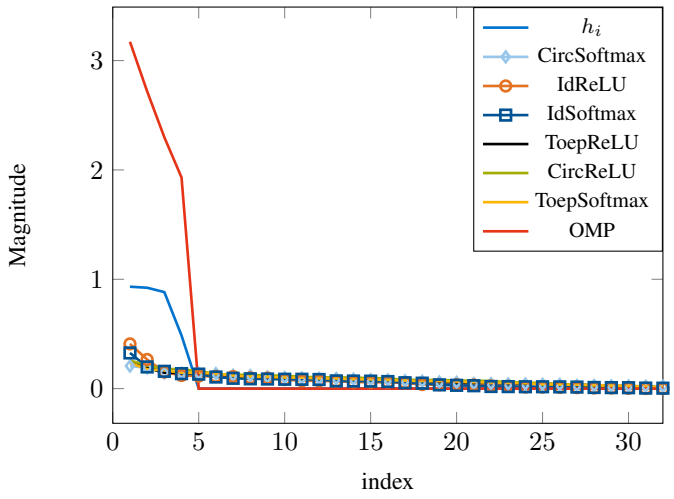

Fig. 13. Comparison of input and output with CNN with 8000 samples and SNR = 0dB

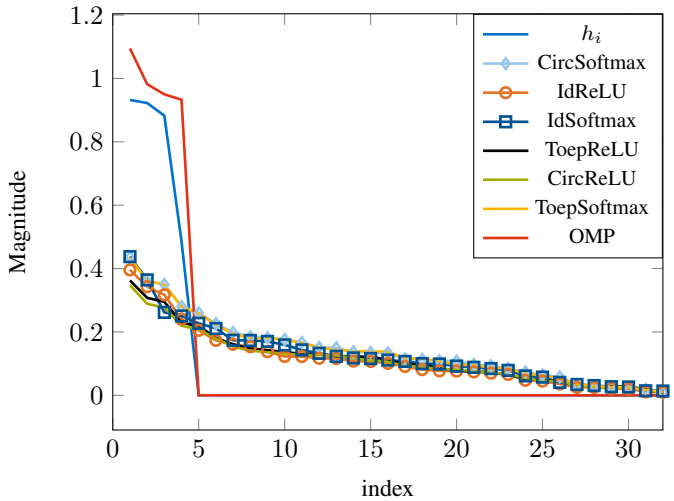

Fig. 14. Comparison of input and output with CNN with 8000 samples and SNR = 10dB

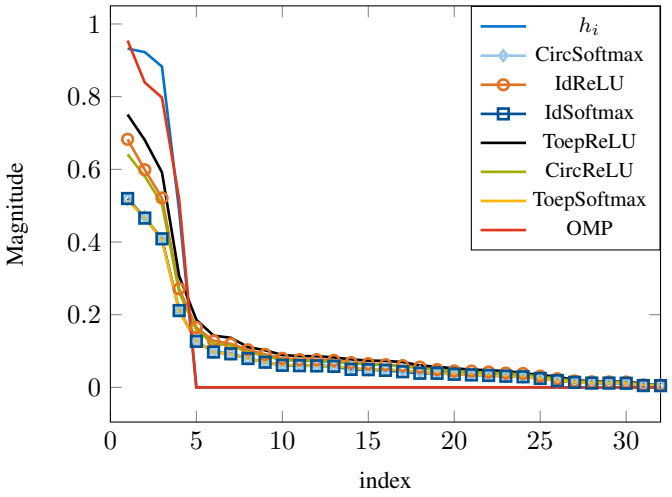

Fig. 15. Comparison of input and output with CNN with 8000 samples and SNR = 20dB

III. Learning Curves

A. 8 antennas

Sparsity = 6, 8 antennas

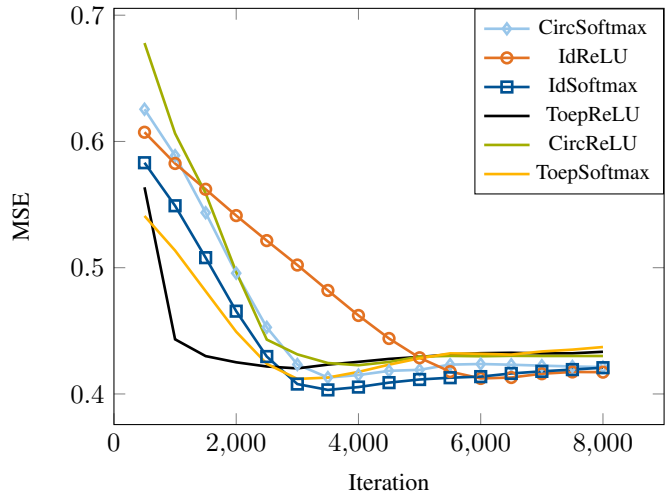

Fig. 16. Learning curve for 8 antennas with 6000 iterations and SNR = 0dB

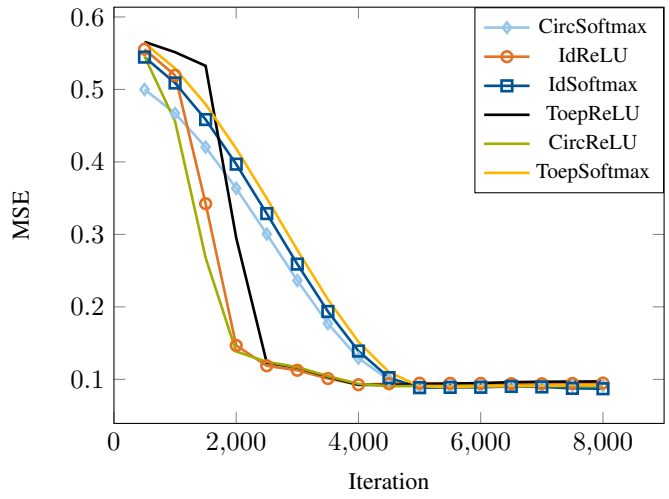

Fig. 17. Learning curve for 8 antennas with 6000 iterations and SNR = 10dB

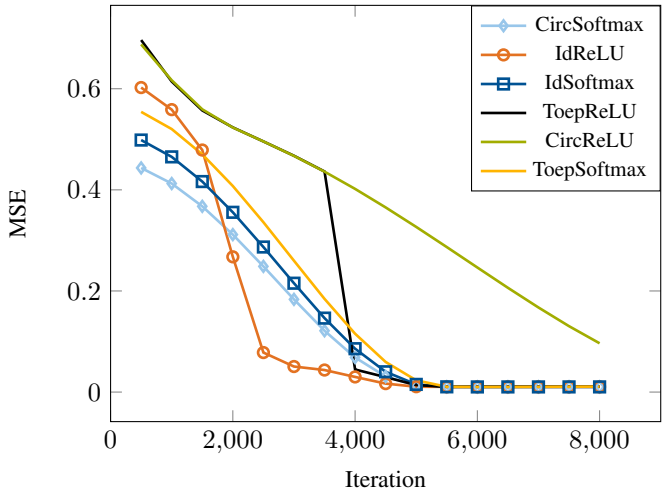

Fig. 18. Learning curve for 8 antennas with 6000 iterations and SNR = 20dB

B. 16 antennas

Sparsity = 6,16 anetnnas

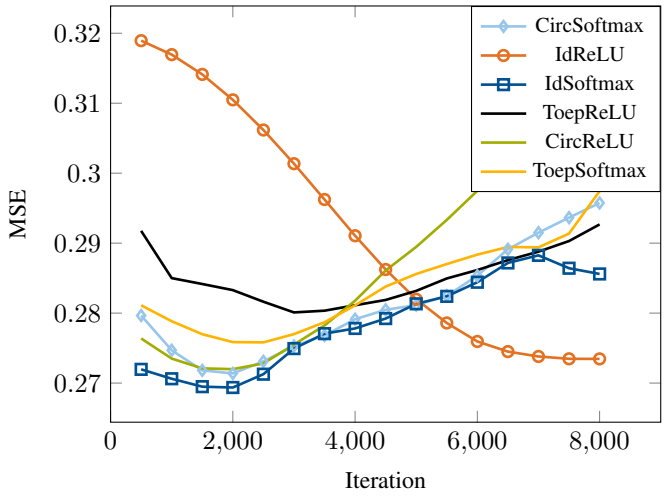

Fig. 19. Learning curve for 16 antennas with 6000 iterations and SNR = 0dB

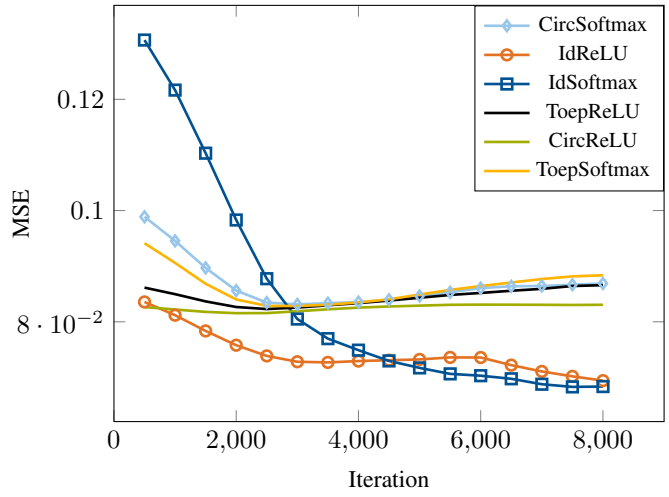

Fig. 20. Learning curve for 16 antennas with 6000 iterations and SNR = 10dB

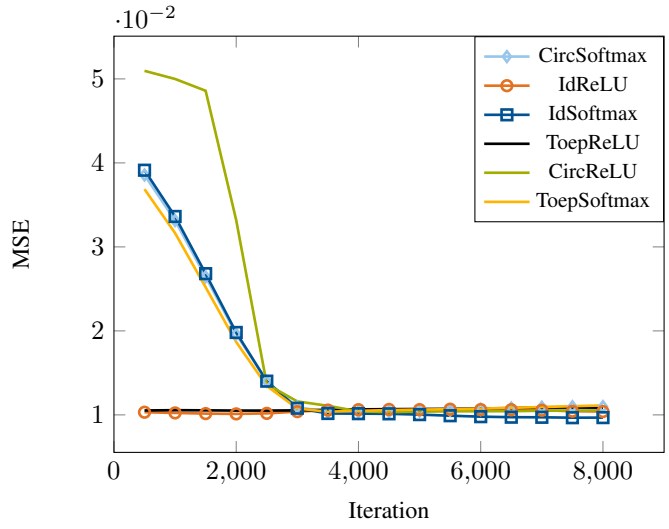

Fig. 21. Learning curve for 16 antennas with 6000 iterations and SNR = 20dB

C. 32 antennas

Sparsity = 6, 32 anetnnas

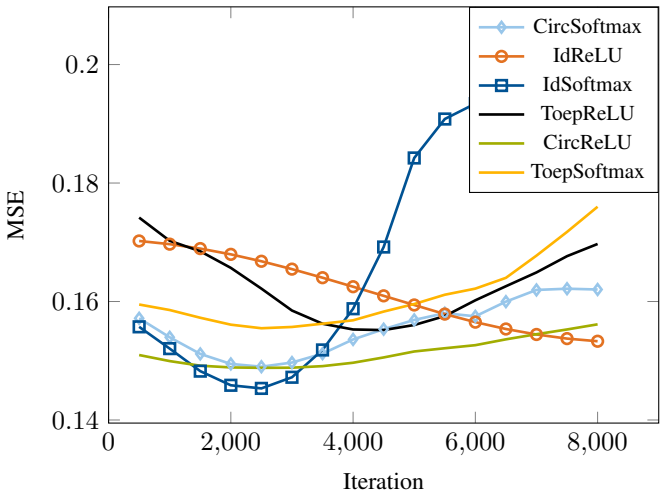

Fig. 22. Learning curve for 32 antennas with 6000 iterations and SNR = 0dB

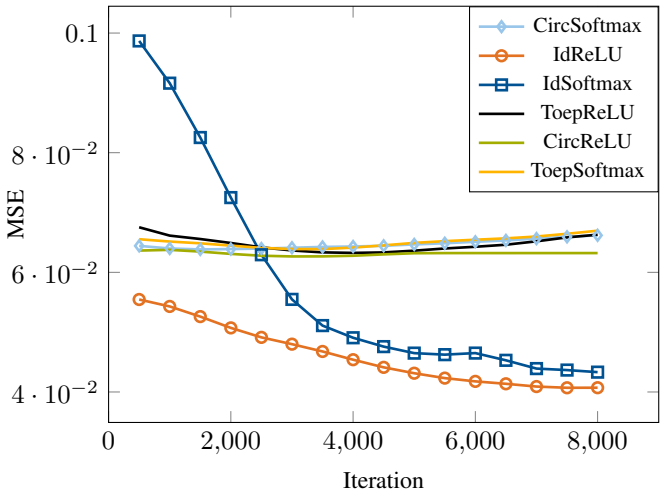

Fig. 23. Learning curve for 32 antennas with 6000 iterations and SNR = 10dB

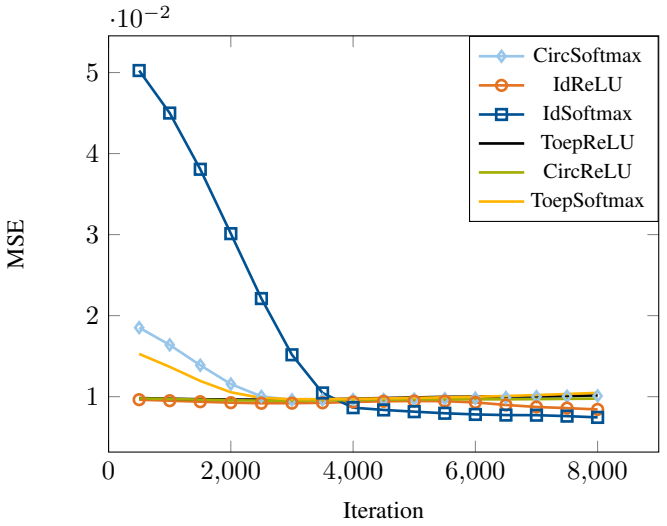

Fig. 24. Learning curve for 32 antennas with 6000 iterations and SNR = 20dB

IV. MSE = F(SNR)

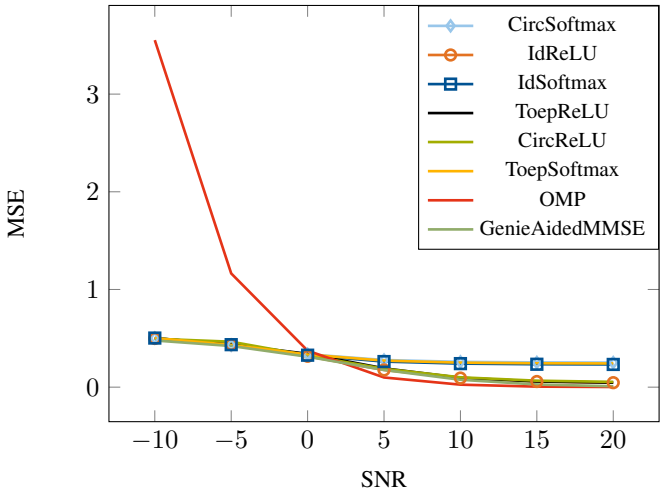

Fig. 25. 8 antennas

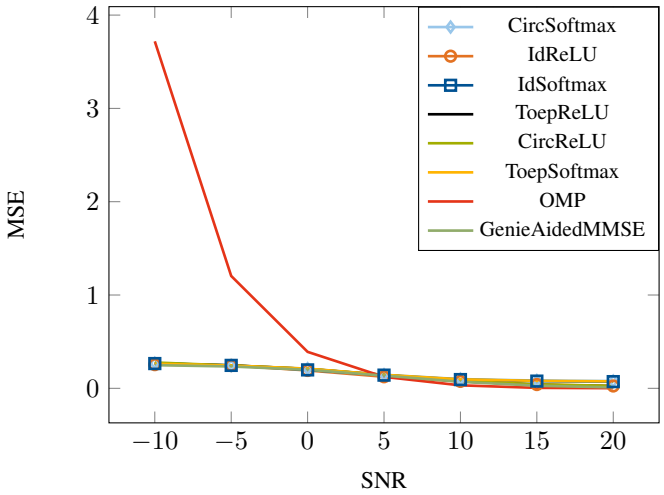

Fig. 26. 16 antennas

V. MSE = F(SPARSITY)

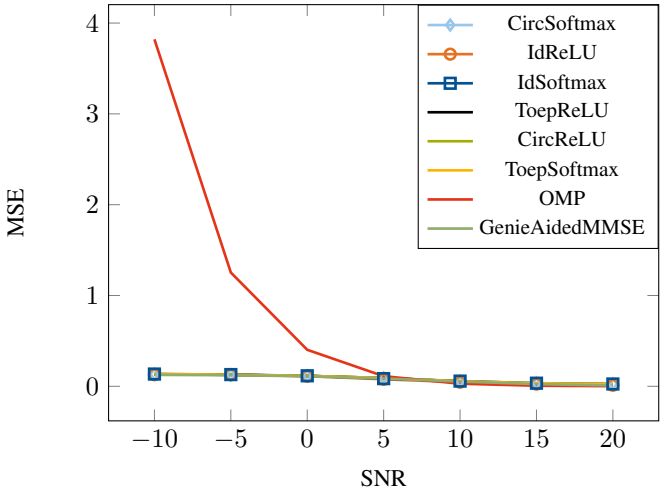

Fig. 27. 32 antennas

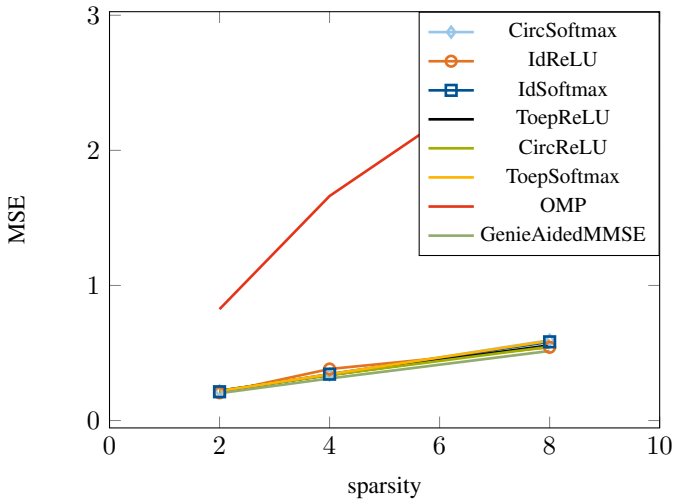

Fig. 28. 8 antennas

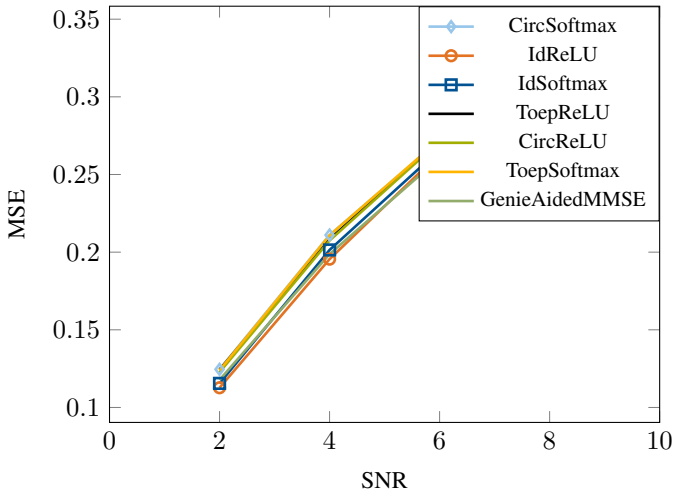

Fig. 29. 16 antennas

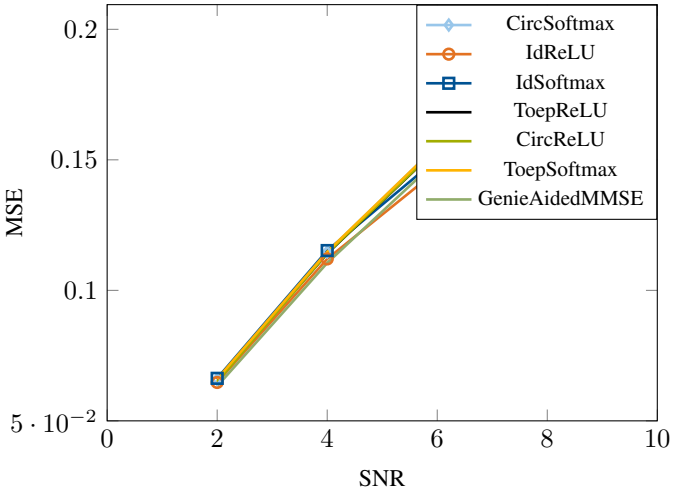

Fig. 30. 32 antennas

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