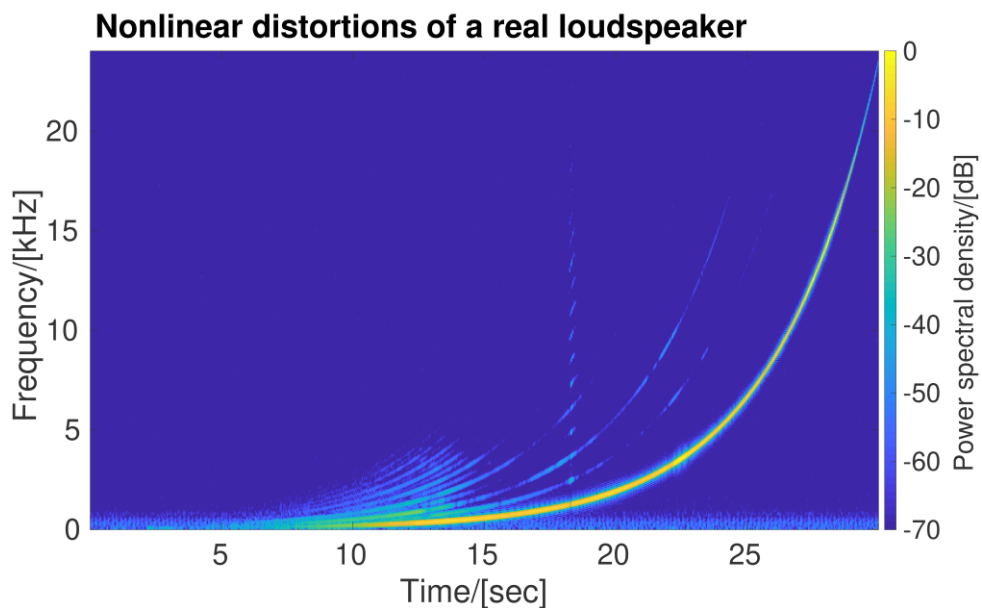


Bachelor Thesis Proposal

Topic: Sparse Nonlinear System Identification

Description: Nonlinear distortions caused by loudspeakers, e.g., as the ones seen in the figure, are viewed as a serious challenge for current Acoustic Echo Cancellation (AEC) systems. Often, these distortions are approximated using parametric basis functions, e.g., Volterra filters, Legendre polynomials, or Power filters. However, a necessary step before the application of a nonlinear AEC algorithm is to determine the order and number of basis functions used. In this thesis, partial update sparse system identification [1] should be investigated as an adaptive basis functions selection approach for nonlinear AEC.

Implementation and evaluation should be done in MATLAB.



Prerequisites: Course 'Digital Signal Processing', MATLAB experience.

Supervisor: M.Sc. Mhd Modar Halimeh
(Cauerstr. 7, room 5.13, mhd.m.halimeh@fau.de)

Professor: Prof. Dr.-Ing. Walter Kellermann

Available: Immediately

[1] H. Wen, S. Yang, Y. Hong and H. Luo, "A Partial Update Adaptive Algorithm for Sparse System Identification," in *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, vol. 28, pp. 240-255, 2020.