EEC 289 Linearization Techniques in RF Power Amplifier Design (4 Units)
Spring 2020

Time: 10:00-11:50am MW

Location: Olson 244

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Course Description: non-linearity in RF power amplifiers; feedback linearization techniques; predistortion techniques; feedforward linearization techniques; device-level and second harmonic linearization techniques.

Course Goals Students will gain the fundamentals of nonlinear circuits and be familiarized with several techniques to linearize microwave power amplifiers.

Expanded Course Description

I. Topics in power amplifier nonlinearity
   - A. Review of two-carrier characterization
   - B. Error vectors
   - C. Memory and intermodulation asymmetry

II. Feedback linearization techniques for RF power amplifiers (RFPA)
   - A. Amplitude enveloped feedback: configuration and analysis
   - B. Vector Envelope feedback

III. Predistortion Techniques
   - A. Predistortion analysis and model
   - B. Analog predistortion
   - C. Digital predistortion

IV. Feedforward power amplifier linearization techniques
   - A. Analysis of the generalized feedforward loop
   - B. Design of components and feedforward loop linearization circuits
   - C. Effects of AM-PM and gain compression adjustment

V. Other linearization techniques
   - A. Device level linearization techniques
   - B. Second harmonic linearization techniques