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ELECTRICAL & COMPUTER ENGINEERING
TEXAS A&M UNIVERSITY

S E M I N A R

Room 1003 ETB

October 28, 2014 3:55-5:10 P.M.

High Efficiency Switching Power Stages for Audio Amplification

by

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Abstract: The consumer's demand for state-of-the-art multimedia devices such as smart phones and tablet computers has forced manufacturers to provide more system features to compete for a larger portion of the market share. All the added features needed to expand the number of applications for these devices increase the power consumption of the whole system, decreasing the battery charge faster. Therefore, high efficiency integrated circuits are needed to extend the battery life of the device while providing the expected outstanding performance. The audio reproduction feature has become a standard in mobile devices where the integrated circuit market trend is to reduce the size of the solution while preserving the outstanding performance of the system. Therefore, low power high efficiency circuits, such as the class-D audio amplifier, are needed to reduce heat dissipation and extend battery life in mobile devices. On this talk, a feed-forward cancellation technique for single-ended class-D audio amplifier architectures to improve the power-supply rejection ratio across the entire audio frequency range is presented. The design methodology, implementation, and tradeoffs of the proposed technique are clearly delineated to demonstrate its simplicity and effectiveness.

Adrian I. Colli-Menchi was born in Merida, Mexico and received the B.S. degree in electrical engineering from the Institute of Technology of Merida (ITM) in 2008. He is currently working toward the Ph.D. degree in electrical engineering at the Analog & Mixed Signal Center (AMSC) at Texas A&M University since 2008. He was a scholarship holder from the National Council of Science and Technology (CONACYT) of Mexico from 2008 until 2013. During summer 2010 and 2011, he was an intern at Silicon Laboratories at Austin, Texas. He is currently a research assistant developing new solutions for high power electrosurgery applications using piezoelectric actuators working jointly with Covidien, Ltd since 2013. His current research interests include low power analog and mixed signal circuits, audio amplifiers, and DC-DC switching converters.