

Seminar On

The Evolution of RF Power Amplifiers: from Past Advancements to Future Challenges

Professor Anding Zhu

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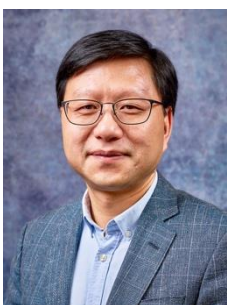
Date : 16 December 2024 (Monday)
Time : 10:30 am – 11:30 am (UTC+08:00) Hong Kong
Venue : Room 15-202, 15/F, State Key Laboratory of Terahertz and Millimeter Waves, Lau Ming Wai Academic Building, City University of Hong Kong

Abstract

Radio frequency (RF) power amplifiers (PAs) are fundamental components in nearly all wireless transmitters, from tiny sensors and mobile phones to high-power base stations. Their primary function is to boost RF signals by converting DC power into amplified radio waves, ensuring reliable transmission over distances. However, this critical role comes with challenges: RF PAs often struggle with low efficiency in order to meet linearity requirements, particularly in high-power applications. In areas such as cellular infrastructure, where energy consumption is substantial, improving PA efficiency has become more urgent than ever, driven by rising energy costs and growing demand for greener and more sustainable solutions.

This talk will trace the evolution of RF PAs over the past decades, highlighting key technological advancements and shifts in design strategies. The focus will be on the ongoing challenges of achieving high efficiency while maintaining performance, particularly in cellular base stations. Additionally, the talk will explore how emerging AI-driven tools can help address these challenges, unlocking new possibilities for innovation in PA architectures and paving the way for the next generation of wireless communication systems.

Biography



Prof. Anding Zhu (祝安定) received the Ph.D. degree in electronic engineering from University College Dublin (UCD), Ireland, in 2004. He is currently a Professor with the School of Electrical and Electronic Engineering at UCD. His research interests include high-frequency nonlinear system modelling and device characterization techniques, high-efficiency power amplifier design, and nonlinear system identification algorithms. He has published over 200 peer-reviewed journal and conference articles.

Prof. Zhu is an IEEE Fellow. He served as the Secretary of the Administrative Committee (AdCom) of the IEEE Microwave Theory and Technology Society (MTT-S) in 2018. He has been an Elected Member of MTT-S AdCom since 2019 and currently is the Chair of the Technical Coordination & Future Directions Committee (TCFDC). He also served as a Track Editor of IEEE Transactions on Microwave Theory and Techniques from 2020 to 2022 and was a recipient of the 2021 IEEE MTT-S Microwave Prize. Prof. Zhu will serve as MTT-S President-Elect in 2025 and then President in 2026.

*** ALL ARE WELCOME ***

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