

Title: The Zoom ADC: An Evolving Architecture

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Abstract: Zoom ADCs combine a coarse SAR ADC with a fine delta-sigma modulator ($\Delta\Sigma M$) to efficiently obtain high energy-efficiency and high dynamic range. This makes them well suited for use in various instrumentation and audio applications. However, zoom ADCs also have drawbacks. The use of over-ranging in their fine modulators may limit SNDR, large out-of-band interferers may cause slope overload, and the quantization noise of their coarse ADC may leak into the baseband. This chapter presents an overview of recent advances in zoom ADCs that tackle these challenges, while maintaining high energy efficiency. Prototypes designed in standard 0.16 μm technology achieve SNDRs over 100dB in bandwidths ranging from 1-24 kHz while consuming only hundreds of μW s.

Author / Presenter BIO:

- (2017) B.Sc degree in Electrical Engineering at TU Delft
- (2019) M.Sc degree in Electrical Engineering at TU Delft, EI Lab, while doing internship at NXP Semiconductors on Zoom ADCs
- (2019-2022) Pursuing PhD at TU Delft in EI Lab, continuing PhD work at NXP Semiconductors
- Currently working at NXP Semiconductors at the Analog Mixed Signal IP Group, working on data converters
- Received VLSI 2020 Best Student Paper Award for his work on Zoom ADCs