

# State of Art Digital-to-Analog Converter Design in Nano-meter CMOS Process

Dr. Rahmi Hezar

## Abstract

Digital to Analog converter (DAC) is an essential building block in applications ranging from audio to RF. Today's popular devices such as smart phones and tablets require DACs integrated in Nano-meter digital CMOS process to able to interact with the real world. In audio signal chain, very tight requirements on linearity and noise performance are enforced. On the radio transmitter signal chain, speed and band width become the critical issue. DACs are also critical in Analog-to-Digital design that uses popular Sigma-Delta Conversion techniques. ADC's performance is as good as the feedback DAC's performance.

This talk will present the issues faced designing highly linear, high dynamic range and band-width DACs especially when using imperfect CMOS processes. It will cover the physical root causes of performance degradation. The key to any high quality and robust system lies in the ability to analyze and optimize at all levels of design. So we will show the state of art in dealing with these problems using smart signal processing, architecture design and circuit design.