**Title:**

Small-form-factor switching-mode DC-DC converter design

**Abstract:**

Power management integrated circuits (PMICs) are essential in modern electronic devices, providing stable voltages and efficient energy to various system components. However, miniaturizing or integrating PMICs into chip or inside package presents significant challenges. Switching mode DC-DC converters play a crucial role in converting unregulated battery power into stable, well-regulated voltages, offering high current capacity and power efficiency. These converters are widely used to power high energy-demanding building blocks, particularly digital circuits such as application processors, digital signal processors, etc. This presentation will explore the design of compact switching-mode DC-DC converters, especially focusing on multi-phase buck converters and single-inductor multiple-output (SIMO) buck converters, with fast transient response, high power efficiency, and large current capacity.