



This presentation will report ultra-low voltage and ultra-low power CMOS operational transconductance amplifiers (OTAs) targeting energy-constrained applications. The first design is a 0.5-V rail-to-rail OTA featuring a complementary input stage and a cross-coupled output stage, which effectively enhances the transconductance of the output devices without increasing chip area, thereby improving both DC gain and capacitive load drivability. Measurement results demonstrate a maximum DC gain of 77 dB with a power consumption of 70 nW. The second design is a 0.3-V operation rail-to-rail OTA employing a feedforward body-driven architecture. By eliminating the tail current source and utilizing PMOS current sources, stable operation at extremely low supply voltages is achieved. The power consumption is 10 nW.