**Title**: RC oscillators with nonlinear temperature compensation

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**Abstract**: With the development of various miniaturized IoT applications, the need for on-chip time management has been growing rapidly. An on-chip RC oscillator is one of the promising candidates since it can be fully integrated with standard CMOS technology.

Conventional on-chip RC oscillators utilize proportion-al-to-temperature (PTAT) and contemporary-to-temperature (CTAT) resistors to achieve a low-temperature coefficient (TC) by canceling their temperature dependency on each other. While this can successfully eliminate the first-order temperature dependency after a 2-point trimming, the accuracy is still limited to the residual nonlinear dependence of resistance to temperature, which ranges from 20 to 50ppm/°C.

Consequently, several techniques have been proposed to eliminate the nonlinear temperature dependency of on-chip oscillators, achieving less than 10ppm/°C temperature stability. In this talk, I will explain the challenges and designs for nonlinear temperature compensation, such as polynomial or look-up-table-based corrections.

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- Chair, IEEE Solid-State Circuits Switzerland Chapter (2019 – Now)
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