Attendees had many questions for Xu and engaged in lively discussions after the talk.

Abstract

Microelectromechanical system (MEMS) inertial sensors are used to measure the acceleration and angular rate of a subject. Compared with traditional inertial sensors, the MEMS inertial sensor has the advantages of small form factor, light weight, low power, and low cost. MEMS inertial sensors can be found in many applications, such as gaming, control, positioning, and navigation. Among them, navigation application requires high resolution and low-bias instability. The existing MEMS inertial sensors have yet to meet these requirements for inertial navigation. This talk will introduce the concepts and operating principles of MEMS accelerometers based on displacement and force sensing and the tuning fork gyroscopes. The talk will briefly present a high-performance MEMS oscillating accelerometer, which demonstrated, for the first time, a sub-µg bias instability. The second part of the talk will focus on the readout circuit design of an open-loop mode split tuning fork gyroscope with a sub-degree bias instability.

—Tsung-Heng Tsai
SSCS Tainan Chapter Chair

IEEE DL Pieter Harpe Visits Lund University, Sweden

IEEE Solid-State Circuits Society Distinguished Lecturer (DL) Pieter Harpe, assistant professor, Eindhoven University of Technology, The Netherlands, presented the lecture “Advanced SAR ADCS—Efficiency, Accuracy, Calibration, and References” at Lund University, Sweden, on 30 November 2017. Approximately 25 people attended, including five people from Ericsson in Lund, two Lund University faculty members, and undergraduate students in IC design at Lund University. After the lecture, many questions were asked, which led to a very engaging discussion.

Abstract

This lecture will discuss advanced techniques that enabled the substantial performance improvement of successive approximation register (SAR) analog-to-digital converters (ADCs) in recent years. After a brief introduction on SAR ADCs, a short overview of recent trends will be given. Then, four design examples with different targets will be shown. The first topic deals with minimizing power consumption. The second and third designs aim to increase accuracy by means of linearization, noise reduction techniques, and calibration. Finally, the last part describes an efficient method to coinTEGRate the reference buffer with the SAR ADC.

—Abira Sengupta