"Recent technology trend of high speed ADCs"

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Since we developed the world first monolithic video-rate 10 bit ADC at about 25 years ago, I have been involved in developing high speed ADCs to realize many innovative digital consumer products. In my talk, I will review and summarize a history of high speed ADCs briefly followed by discusses a recent technology trend of ADCs. Technology scaling has contributed to an increase of conversion rate; however, it now also leads to difficulties to increase or to maintain performance of ADCs. New converter design challenges have been started. One strong trend in design of ADCs is to omit operational amplifiers (OpAmps), which have been used to form the basis of modern ADC design but now are no longer useful. Comparator base ADCs, such as successive approximation ADCs become very attractive in future energy efficient and scaled CMOS conscious ADC architectures. At last part I will compare these two basic ADC architectures.

Bio:

Akira Matsuzawa received B.S., M.S., and Ph. D. degrees in electronics engineering from Tohoku University, Sendai, Japan, in 1976, 1978, and 1997 respectively. In 1978, he joined Matsushita Electric Industrial Co., Ltd. Since then, he has been working on research and development of analog and Mixed Signal LSI technologies; ultra-high speed ADCs, intelligent CMOS sensors, RF CMOS circuits, and digital read-channel technologies for DVD systems. He was also responsible for the development of low power LSI technology and SOI devices. From 1997 to 2003, he was a general manager in advanced LSI technology development center. On April 2003, he joined Tokyo Institute of Technology and he is professor on physical electronics. Currently he is researching in mixed signal technologies; RF CMOS circuit design for SDR and high speed data converters. He served guest editor in chief for special issue on analog LSI technology of IEICE transactions on electronics in 1992, 1997, and 2003, and committee member for analog technology in ISSCC. Now he serves IEEE SSCS elected Adcom and IEEE SSCS Distinguished lecturer.

He received the IR100 award in 1983, the R&D100 award and the remarkable invention award in 1994, and the ISSCC evening panel award in 2003 and 2005. He is an IEEE Fellow since 2002.