Special Issue on
Emerging Design Methodologies and Techniques for Delta-Sigma A/D and D/A Converters

Call for Papers

Technology advances in design methodologies and techniques the past twenty years have made the use of delta-sigma conversion technique widespread. Delta-sigma analog-to-digital (A/D) and digital-to-analog (D/A) converters can be found in many applications such as communication systems, consumer and professional audio systems, and instrumentation and measurement devices. In recent years, wireless communication has been the major driving force behind delta-sigma converters and the required bandwidth has dramatically increased from 200 kHz for GSM to 20MHz for wireless networks. Looking into the future, delta-sigma converters are finding new applications in space and medical areas. Compared to their Nyquist converter counterparts, Delta-sigma converters could offer a good speed-accuracy tradeoff for applications of wide signal bandwidth. However, such an advantage comes at the expense of higher design, simulation, and verification complexity.

The main focus of this special issue will be on the recent advances in design methodologies, techniques, algorithms, and tools for delta-sigma A/D and D/A converters. Potential topics include, but are not limited to:

- Hierarchical top-down, bottom-up, or integrated design methodology
- Intellectual-property-aware, reuse-aware, and technology-migration-aware design methodology
- Yield-aware statistical design techniques and statistical analysis
- Design, simulation, and verification at each design level
- New converter/circuit topologies
- New discrete-time, continuous-time, and hybrid implementations
- Reconfigurable designs for next-generation wireless communications
- New methodologies/techniques to address clock jitter and loop delay
- Emerging design challenges in modern nanoscale CMOS technologies
- Design automation or assistance tools
- Emerging applications in sensor/space/medical/biomedical and other areas
- Ultralow power or low-complexity implementations

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Manuscript Due	Friday, 30 November 2012
First Round of Reviews	Friday, 22 February 2013
Publication Date	Friday, 19 April 2013

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