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**ANALOG INTEGRATED CIRCUITS AND SIGNAL PROCESSING**  
**An International Journal**

*Special issue on*  
**Analog Implementations of Cellular Neural Networks and Analog VLSI**

Massively-parallel analog hardware has been used for cellular neural networks (CNNs), artificial neural networks (ANNs), early vision processors, and other applications, offering speed, power consumption and cost advantages over digital hardware. To address various aspects of massively-parallel analog hardware, a special issue will be published on all aspects of CNN, ANN, and other specialized analog circuits implementation. Topics of interest include, but are not limited to:

- \* Analog implementations of CNNs
- \* CNN universal machine architecture and design
- \* Analog implementations of ANNs and other massively-parallel analog hardware
- \* Field-programmable analog array (FPAA) implementations of CNNs, ANNs and other massively-parallel systems
- \* Applications of analog CNN, ANN, and other massively-parallel analog hardware

A call for papers for a companion special issue on field-programmable analog arrays and their applications is being simultaneously announced. Please see the journal or contact one of the Guest Editors for more details.

All manuscripts are subject to review. To be considered for this special issue of Analog Integrated Circuits and Signal Processing, prospective authors should submit six copies of their complete manuscript describing original contributions, and specify this issue, by **July 1, 1996** to: Ms. Karen S. Cullen, Kluwer Academic Publishers, 101 Philip Drive, Assinippi Park, Norwell, MA 02061, Tel: (617) 871-6300, Fax: (617) 878-0449, E-mail: karen@world.std.com or to one of the four **Guest Editors**:

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***Special issue on Field-Programmable Analog Arrays and Their Applications***

Field-programmable analog arrays (FPAAs) are analog circuits of changeable configuration and parameters, intended to provide a medium for the implementation of various analog and mixed-signal (analog digital) processing functions. Several FPAA architectures, combining analog signal-processing "data path" and digital control circuits, have been presented in the literature along with numerous applications. To address the FPAA technology and its applications, a special issue will be published on all aspects of programmable analog hardware, and especially FPAAs and analog signal processing in the context of cellular neural networks (CNNs), artificial neural networks (ANNs), analog early vision processors and other specialized programmable analog circuits. Topics of interest include, but are not limited to:

- \* Architectures for programmable analog and mixed-signal hardware
- \* Circuit implementations of programmable analog and mixed-signal hardware
- \* FPAAs as a medium for implementing CNNs, ANNs, and other massively-parallel systems
- \* FPAAs as a medium for implementing multi-valued logic (MVL) and fuzzy logic circuits
- \* Specialized programmable analog hardware (e.g. programmable and adaptive filters, control systems)
- \* Commercial applications of programmable analog hardware

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**ANALOG INTEGRATED CIRCUITS AND SIGNAL PROCESSING**  
*Special Issue on*  
**Analog VHDL**

VHDL was defined and is used mainly for digital systems. For this domain, VHDL is a powerful and now widely accepted standard (for modeling, simulation and synthesis). But there is also an urgent need for analog designers to have such modeling, simulation and synthesis tools.

One approach relies on the structure of VHDL and uses leaf cells as basic blocks. These leaf cells could be handled by some analog simulator (SPICE). This is the most economical approach, but the main problem in this case is to standardize it and the results will depend strongly on the kind of simulator used.

Another approach is to develop analog modeling and simulation in pure VHDL applying one of the digital systems, which makes it possible to get analog representation of results.

The most important way is to extend the semantic and syntax of VHDL and standardize it. VHDL'93 with currently developing VHDL-A seems to be a good approach to overcome many problems concerning analog and mixed-analog design. The first VHDL-A Language Reference Manual is expected by mid '95, and the standard is expected to be approved beginning of '96.

The goal of this Special Issue is to present state-of-the-art in analog VHDL domain, taking into account new approaches to be used in VHDL-A.

The topics of this Special Issue include, but are not limited to:

- \* Use VHDL for analog design
- \* Analog and mixed-analog design methodologies
- \* VHDL-A standardization
- \* Simulation
- \* Component modeling
- \* Macromodeling
- \* Behavior modeling
- \* Synthesis

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