Two centuries ago, in 1799, a native of Como — Alessandro Volta — presented to the scientific community of his times an invention that was to start a global technological revolution: the first electric battery. To be sure, electricity was already well known by its effects, but it was seen as a “phenomenon” to be studied by scholars, occasionally enjoyed by the layman as a “society game,” certainly not capable of practical utilization. There was no way of producing a continued, sustained current flow; accumulation of static electricity would conduce only to discharge effects. Volta’s battery was a simple affair (the original drawing and notes are reproduced on the cover of these proceedings), a “stack” of zinc and leather disks between which disks imbibed with an acid were interposed: it was also the first “machine” capable of producing a continuous electric flow, of granting sustained — albeit small — availability of electric power. Volta was an example of the successful scientist. In 1800 he discussed his invention in front of Emperor Napoleon, who made him a Count, and even subsequent political upheavals did not disrupt his career (in 1815, the Austrian Emperor, having won back Northern Italy within the Austrian Empire, made him Director of the Philosophical Faculty at the University of Pavia, where he had been teaching for many years). In the year 1999, “Volta celebrations” are under way in a number of sites, first and foremost Como (where he was born) and Pavia (where he taught at the local University).

It seemed appropriate to celebrate Volta not only by discussing past inventions and historical events, but also by presenting the results of recent research in areas that may be seen as fostered, centuries later, by his invention.

It is thus our pleasure, on behalf of the VOLTA’99 Organizing and Technical Program Committees, to welcome you to the IEEE Alessandro Volta Memorial Workshop on Low Power Design. All of the technical presentations, the invited talks and the embedded tutorials will take place between March 4 and 5 at the Villa Olmo conference center which is located in Como.

Regarding the technical program of the workshop, a total of 31 papers were submitted. Each of them has been reviewed by four to six members of the Technical Program Committee, and the top 15 in the resulting ranking have been selected for oral presentation at the conference and publication in the proceedings. Additionally, five papers have been included in the program as poster presentations and are published in the proceedings.

Besides the aforementioned papers, the program features a number of invited presentations given by distinguished lectures and researchers. David Blaauw from Motorola will make the opening speech, in which several issues related to the design of power efficient VLSI circuits running at very high frequencies are addressed.

Two invited talks are offered to the workshop attendees. The first, given by Christian Piguet from CSEM, illustrates how early computer architectures can provide designers of modern digital systems ideas for effective optimization of the power budget. On the other hand, Rob Roy from Intel, gives an interesting forecast on the future of high-performance, low-power microprocessors.

Two embedded tutorials are also part of the program. The first, given by Bill Athas from USC-ISI, proposes an up-to-date overview of low-power circuit techniques for applications in the domain of embedded computing. The second, presented by Giovanni De Micheli from Stanford and by Luca Benini and Alessandro Bogliolo from
Universita di Bologna, introduces the audience with the new topic of system-level power management.

Carlo Guardiani from ST Microelectronics has organized the Thursday night panel, which will discuss various problems and solutions to designing low power VLSI circuits with multiple supply voltages.

We would like to take this opportunity to thank the IEEE Computer Society and the Comune di Como for sponsoring and financially supporting the workshop.

We hope you will enjoy VOLTA'99 and all the related events that will take place in Como during the workshop.

Mariagiovanna Sami
General Chair

Enrico Macii and Earl E. Swartzlander, Jr.
Technical Program Co-Chairs

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1 A note for non-Italians: the Italian word usually adopted instead of “battery” – *pila* – actually denotes a *stack*, thus going back to that first implementation.