



# Workshop on

# Unconventional Computing

## From Cellular Automata to Wetware

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### Workshop description

For more than half a century, the von Neumann computer architecture (i.e., the stored program concept) and the abstract concept of the Turing machine have largely dominated computer science in many variants and refinements. One might certainly ask, how the future of these two major paradigms will look? Whereas it is unlikely that they will disappear, there seems to be a growing need for novel and unconventional computing paradigms to face specific needs and challenges in new fields and application domains. This quest is also motivated by the observation that fundamental progress in several fields of computer science sometimes seems to stagnate. For example, one of the keys to machine intelligence is computers that learn, and we are still just scratching the surface of this problem. Another example is our inability to create and program complex systems that is simply not keeping up with the desire to solve complex problems.

The goal of this workshop is to bring together a multidisciplinary core of scientists who are working in the field of unconventional computing, to provide a common ground for dialog and interaction, to highlight the latest advances, and to discuss the main directions for the future. We encourage experimental, computational, and theoretical articles.

Topic of the workshop include, but are not limited to:

chemical computing ♦ reaction-diffusion systems ♦ cellular computing ♦ bio- and molecular computing ♦ mechanical computing ♦ analog computation ♦ novel hardware architectures ♦ computational complexity of unconventional computers ♦ theory of amorphous computing ♦ logics of unconventional computing ♦ computing in nanomachines ♦ physical limits to mechanical computation

### Paper submission

All workshop papers will be carefully reviewed by a minimum of two independent reviewers. In addition to the official ECAL CD-ROM proceedings, all accepted papers for this workshop will be published in a special issue of the International Journal of Unconventional Computing. For submission guidelines, visit: [www.teuscher.ch/ecal2005\\_uc](http://www.teuscher.ch/ecal2005_uc)

### Important dates

Submission deadline: May 20, 2005 ♦ Notification of acceptance: June 15, 2005 ♦ Camera-ready copy due: June 22, 2005

### Organizers

Andy Adamatzky, University of the West of England ♦ Christof Teuscher, University of California San Diego (UCSD)

### Program committee

Andy Adamatzky, UWE, UK ♦ Tetsuya Asai, Hokkaido University, Japan ♦ Stefania Bandini, University of Milano-Bicocca, Italy ♦ Bastien Chopard, University of Geneva, Switzerland ♦ Peter Dittrich, Friedrich-Schiller-University Jena, Germany ♦ Enrico Formenti, University of Nice-Sophia Antipolis, France ♦ Jerzy Gorecki, Polish Academy of Science and Cardinal Stefan Wyszyński University, Poland ♦ Andrew Ilchinski, Center for Naval Analyses, USA ♦ Martin Kutrib, University of Giessen, Germany ♦ Norman Margolus, MIT Artificial Intelligence Laboratory, USA ♦ Jacques Mazoyer, Ecole Normale Supérieure de Lyon, France ♦ Julian F. Miller, University of York, UK ♦ Jonathan W. Mills, Indiana University, USA ♦ Kenichi Morita, Hiroshima University, Japan ♦ Nicholas G. Rambidi, Moscow State University, Russia ♦ Chris Salzberg, University of Tokyo, Japan ♦ Ken Steiglitz, Princeton University, USA ♦ Susan Stepney, University of York, UK ♦ Oliver Steinbock, Florida State University, USA ♦ Christof Teuscher, UC San Diego, USA ♦ Tommaso Toffoli, Boston University, USA ♦ Hiroshi Umeo, Osaka Electro-Communication University, Japan ♦ Burton Voorhees, Athabasca University, Canada ♦ Joerg R. Weimar, Technical University Braunschweig, Germany ♦ Thomas Worsch, Universität Karlsruhe, Germany ♦ Andrew Wuensche, DDLab and UWE, UK ♦ Klaus-Peter Zauner, University of Southampton, UK



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