



PACT-2017

Portland, Oregon, USA

Sep 9-13, 2017

# 1<sup>st</sup> Workshop on Autotuning and Adaptivity Approaches for Energy efficient HPC Systems (ANDARE'2017)

Portland, Oregon, USA, Sept. 9, 2017

A workshop part of PACT-2017, Portland, Oregon, USA, Sept. 9-13, 2017

<http://www.fe.up.pt/andare2017>

<https://parasol.tamu.edu/pact17/>

## CALL FOR PAPERS

High Performance Computing (HPC) has been traditionally the domain of grand scientific challenges and a few industrial domains such as oil & gas or finance, where investments are large enough to support massive computing infrastructures. Nowadays, HPC is recognized as a powerful technology to increase the competitiveness of nations and their industrial sectors, including small scale but high-tech businesses – to compete, you must compute has become an ubiquitous slogan. However, given the performance, power and energy envelopes and the increasingly complexity of each computing node, the conventional compiler and code optimization process is no more adequate and there is the need to move to runtime many decisions and explorations of the vast design space. In this context, runtime adaptivity and runtime autotuning is of paramount importance. Furthermore, reaching exascale poses the additional challenge of significantly limiting the energy envelope, while providing massive increases in computational capabilities which may increase the importance of runtime optimizations.

This workshop intends to be an informal, privileged, forum to present and discuss new ideas, challenges, open issues, and trends regarding autotuning and runtime adaptivity in the context of energy-efficient HPC systems. This includes but not limited to the entire vertical stack ranging from the software components (programming best-practices, tools, compilers, runtime environments, operating-systems) to the hardware and firmware components at support of high level autotuning and runtime adaptivity mechanisms. The workshop intends to bring together practitioners, people from supercomputing centers, and researchers interested on those topics. It is foreseen that the workshop may contribute to encourage collaborations among the participants..

## TOPIC AREAS

The workshop will address, but is not limited to, the following topics:

- Holistic approaches for autotuning and runtime adaptivity
- Methods to control the decision layers when targeting computations to HPC systems
- Self-adaptive applications
- Optimizations for energy efficiency
- Frameworks and tools for autotuning
- DSLs for describing autotuning strategies
- Parallel application autotuning
- Matching dynamically program parallelism to platform parallelism
- Runtime adaptivity to variable workloads, resource management and power management
- Monitoring libraries for autotuning
- Machine learning approaches for autotuning
- Autotuning and runtime adaptivity in the context of hardware accelerators using GPUs and/or FPGAs
- Applications showing the advantages of online autotuning in HPC
- Power- and energy-aware job schedulers, runtime systems and operating systems.
- Hardware and architectural support for runtime adaptivity

## ORGANIZERS

- Andrea Bartolini, ETHZ, Switzerland, [a.bartolini@unibo.it](mailto:a.bartolini@unibo.it)
- João M. P. Cardoso, Universidade do Porto, Portugal, [jmpc@fe.up.pt](mailto:jmpc@fe.up.pt)
- Cristina Silvano, Politecnico di Milano, Italy, [cristina.silvano@polimi.it](mailto:cristina.silvano@polimi.it)

## PAPER SUBMISSION INSTRUCTIONS

Proceedings are intended to be published in the **ACM International Conferences Proceedings Series**. Papers should be submitted electronically via <https://easychair.org/conferences/?conf=andare2017>. The review process will be **single-blind**. Electronic paper submission requires a full paper or a short paper (for posters), up to 6 or 2, respectively, double column ACM format pages, including figures and references. Papers should be submitted in PDF format. Please use the following template when preparing your manuscript: <http://www.acm.org/sigs/publications/proceedings-templates>

## IMPORTANT DATES

**Paper/Poster submission deadline:** July 1, 2017 - 11:59 PM (UTC)

**Extended Notification of acceptance:** July 22, 2017

**Camera ready version:** Sept. 4, 2017

## SPONSORSHIP



<http://www.antarex-project.eu/>

AutoTuning and Adaptivity approach for Energy efficient eXascale HPC systems