

Luca Gammaitoni

Heterogeneous Distributed Computing: how to address the powering issue
Luca Gammaitoni

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The research interests of Prof. Gammaitoni comprise stochastic nonlinear dynamics (with specific reference to stochastic resonance, dithering, resonant trapping, resonant crossing phenomena), energy harvesting (with specific reference to nonlinear vibration harvesting, micro and nanoscale energy management), energy efficiency in computing devices (with specific reference to micro and nanoscale logic gate devices), and thermal noise and non equilibrium relaxation processes in solid state systems.

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Abstract of communication:

It is a common understanding that ICT is the key engine of growth in modern society. The energy consumption and carbon dioxide emission from the expanding ICT use, however, is unsustainable. New methods are required to make ICT technology more energy efficient but also the development of new self-powered, energy-harvesting technologies that would enable micro- and nano-scale systems that consume zero power through the harvesting of waste energy from the environment are required. Such technologies provide an opportunity for Europe to lead and generate significant economic benefit whilst simultaneously addressing climate change, healthcare and manufacturing efficiency benefits. In this talk we will briefly address the two sides of the ICT-Energy problem: the decrease of energy dissipation in present ICT devices and the increase of energy efficiency in harvesting technologies (see ZEROPOWER Strategic Research Agenda, Nanoenergy Letters, 4, p.6, 2012). We need to solve these two problems in order to bridge the gap between energy demand and energy request in mobile/distributed ICT devices. Both tasks require advances on the very same scientific topic: the management of energy transformation processes at nanoscale.

Heterogeneous Distributed Computing

June 14

Keynote talk

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