

ATTRACT TWD Symposium: Trends, Wishes and Dreams in Detection and Imaging Technologies



Thursday, June 30, 2016 - Friday, July 1, 2016

Other Institutes

Scientific Program

The Programme consists of invited, concise speculative contributions following submitted short abstracts that propose new potential detection and imaging technologies that could be used in scientific instrumentation by 2025. For the purposes of the Symposium, some trends and assumptions of the evolution of state-of-the-art technologies are offered in "Overview Materials".

Symposium Scope

The scope is on novel detector and imaging concepts developed for scientific instrumentation in connection with European Research Infrastructures and their collaborating partners (universities, research labs, industry). It will cover a broad technology spectrum (front/back-end electronics, system integration, data transmission/processing, software, etc). These technologies will be used in astronomy, space research, synchrotron light physics, optical (laser) physics, photonics, nuclear engineering, molecular biology, particle physics, etc. There is no geographical limitation for presenting ideas.

Symposium format and call for contributions

The symposium will consist of concise, 10 minutes presentations based on submitted light-reviewed selected abstracts. Physical presence at the Symposium is preferred but also Skype contributions are accepted. The symposium will include four short visionary key talks, including industrial technology development and business perspectives. A call for contributions and instructions will be announced soon here and at the ATTRACT website.

Technology Evolution

Today we are witnessing an unprecedented dawn of technological development, impacting scientific research, industry, business and society at large. In order to offer a consistent view of detection and imaging technologies available by 2025, the following assumptions are made:

- Microprocessor clock speeds double every three years.
- Individual transistor prices halve every 1.6 years.
- RAM doubles every 1.5 years (bit/\$).
- DNA sequencing costs halve every 1.6 years for a finished base pair.
- Size of mechanical devices halve every five years (in diameter).
- Wireless performance increases by a factor of ten every five years (bits/second).
- The performance of supercomputers improves by a factor of 1,000 every 11 years.

Organizing Committee

Francesco Sette (ESRF, Chair), Sergio Bertolucci (Bologna), Luke Collins (EIRMA), Andrew McCarthy (EMBL) Jonathan Wareham (ESADE), Christer Frodjh (Mid-Sweden University), Cinzia da Via (Manchester), Marzio Nessi (CERN), Paolo Mutti (ILL), Mark Casali (ESO), John Wood (ATTRACT), Thorsten Lux (IFAE), Michael Krisch (ESRF).

Local organizing committee and Secretariat

Jonathan Wareham (ESADE), Laura Castellucci (ESADE), Markus Nordberg (CERN), Pablo Garcia Tello (CERN).

Detectors (sensor elements)

Front/Back-End electronics

TDAQ, signal processing

Software, imaging & computing

Engineering & Integration