

## Call for papers

### 5<sup>th</sup> workshop on single-photon devices and applications

The Physikalisch-Technische Bundesanstalt announces the fifth workshop on single-photon devices and applications as a follow up to the workshops held at NIST in 2003, at NPL in 2005, at INRiM in 2007 and at NIST in 2009.

The workshop is intended to bring together a broad range of people with interests in single-photon technology and applications. We will survey the current state and latest developments of single-photon detectors and sources with a focus on existing limitations, deficiencies and opportunities for improvement. These developments are driven by the emergence of many applications requiring such devices. These applications, such as quantum cryptography, quantum computation, correlated photon metrology, quantum imaging, quantum interferometry, entanglement etc, comprise a new area of endeavour known as Quantum Information Technologies (QIT). For each application, different properties of the devices are required. There will be a special session reporting on efforts towards realising photon-based standards funded by the European Commission (FP7) ([www.quantumcandela.org](http://www.quantumcandela.org)).

The workshop will be an opportunity for researchers from universities, industrialists and metrologists to report on current and future developments in these areas. We also welcome papers from areas of photon-detection research such as astrophysics, nuclear physics, biology, etc...

The intended outcomes of this workshop: for the community to continue working together and inform each other of developments and needs in this area and identify other applications that operate in low photon counting regimes.

#### Topics and issues of interest:

**Detector issues:** definition of detector related terms and characterization parameters, detection efficiency, spectral coverage, spatial uniformity, speed, dark counts, dead time, after-pulsing, pulse discrimination, timing jitter, stability, photon-number resolution, array configuration, multichannel coincidences and the efficient handling of multichannel data using inexpensive solutions such as FPGAs

**Source issues:** emission efficiency, collection efficiency, photon statistics, purity of single photon states, entanglement generation

**Photon manipulation:** low-loss high-speed switches for single-photon applications, mode matching, mode engineering, pulse shaping, coupling efficiency

**Metrology:** detectors, sources, components, systems

**Applications of single photon technology:** cross disciplinary issues, i.e. measurements enabled by single photon detection (e.g. in the field of astrophysics, nuclear physics, biology, etc.)

**Entanglement:** production and preservation of high-purity photonic entanglement, measures of nonclassicality, state source designs (correlated, entangled, factorizable) for applications like sensing, communication or tests of the laws of physics

**Special session:** Realization of photon-based standards

## Poster size

Poster size: 1.18 m (width) x 1.45 m (length)