Single-photon Measurement Workshop

National Physical Laboratory

University of York

National STEM Learning Centre, University of York

10/02/2026 – 12/02/2026

WORKSHOP SCHEDULE AT A GLANCE

Tuesday 10 Feb

Time	Session Title
09:15-09:45	Registration
09:45-09:55	Welcome
09:55-10:15	Quantum Technologies
10:15-10:45	What is a photon?
10:45-11:15	Break
11:15-12:00	Single-photon sources (SPSs) based on colour centres in diamond, quantum dots and molecules
12:00-12:45	Single-photon detectors (SPDs) – focussing on avalanche diodes (SPADs) – dark counts, after-pulses, deadtime, detection efficiency
12:45-13:00	Introduction to lab sessions
13:00-14:00	Lunch break
PM	Lab sessions (14:00 – 16:00)

Wednesday 11 Feb

09:00-09:30	Single-photon sources based on spontaneous parametric downconversion (SPDC) and four-wave mixing (FWM)
09:30-10:00	Superconducting nanowire single photon detectors (SNSPDs), photon number-resolving detectors (PNRDs)
10:00-10:30	Time taggers and application to photon number-resolving detectors
10:30-11:00	Break
11:00-11:45	Measuring the single-photon nature of light (HBT)
11:45-12:30	Quantum key distribution and the Clauser-Horne-Shimony-Holt (CHSH) inequality
12:30-13:00	Coherent optical (homodyne) detection
13:00-14:00	Lunch break
PM	Lab sessions (14:00-16:00)
16:30	Lab tour - Institute for Safe Autonomy - Quantum Labs

EURAMET

QUANTUM TECHNOLOGIES

INTEGRATED QUANTUM NETWORKS HUB

Single-photon Measurement Workshop

National Physical Laboratory

University of York

National STEM Learning Centre, University of York

10/02/2026 – 12/02/2026

WORKSHOP SCHEDULE AT A GLANCE

Thursday 12 Feb

Time	Session Title
09:00-09:30	SI traceability and standards
09:30-09:45	Datasheet interpretation
09:45-10:30	A quantum eraser
10:30-11:00	Break
11:00-11:15	Writing control code
11:15-12:00	Quantum random number generators (QRNGs)
12:00-12:45	Quantum photonic integrated circuits (QPICs)
12:45-13:00	Networking time
13:00-14:00	Lunch break
PM	Lab sessions (14:00-16:00)

EURAMET

QUANTUM TECHNOLOGIES

INTEGRATED QUANTUM NETWORKS HUB

Single-photon Measurement Workshop

National Physical Laboratory

University of York

National STEM Learning Centre, University of York

10/02/2026 – 12/02/2026

LAB SESSIONS

Coupling light to multi-mode (MM) and single-mode (SM) optical fibre. Measuring loss when coupling optical fibres.

M^2 measurement of a laser beam.

Measuring the dark counts (background noise) from a single-photon avalanche detector. Calibrating its detection efficiency / measuring the mean number of photons in an optical pulse.

Calibrating an optical homodyne detector.

Measuring whether two photons are indistinguishable, using a Hong-Ou-Mandel interferometer.

Measurement of Bell inequalities and their connection to quantum random number generation.

EURAMET

QUANTUM TECHNOLOGIES

INTEGRATED QUANTUM NETWORKS HUB