Program and Abstract Book

2. International Symposium on

Single Photon based Quantum Technologies

Berlin, Germany
May 22 - 24, 2019

PicoQuant

Program

Wednesday, May 22

08:00 - 09:00 Registration

09:00 - 09:15 Opening Remarks by ***Andreas Bülter***, *Berlin, Germany*

09:15 - 09:30 ***Tommaso Calarco****, Ulm, Germany*
From a Quantum Flagship to a Quantum Fleet: Quantum Technologies after Horizon2020

Session: Integrated Photonic Circuits **Chair: Tommaso Calarco**

09:30 - 10:00 ***Edo Waks****, Maryland, United States (Invited Talk)*
Quantum photonics with strongly interacting photons

10:00 - 10:20 ***Marlon Placke,*** *Berlin, Germany (Student Award)*
Dispersion-engineered AlGaAs-on-insulator waveguides for integrated nonlinear quantum optics

10:20 - 10:40 ***Paweł Mrowiński****, Berlin, Germany*
Chiral light-matter coupling in deterministic quantum dot waveguides

10:40 - 11:15 COFFEE BREAK

Session: Quantum Information Processing **Chair: Rinaldo Trotta**

11:15 - 11:45 ***Tommaso Calarco****, Jülich, Germany (Invited Talk)*
Quantum technologies and quantum control

11:45 - 12:05 ***Vojtěch Švarc****, Olomouc, Czech Republic (Student Award)*
Low-latency 100ps-switchable tunable coupler for active photonic routing

12:05 - 12:25 ***Gioan Tatsi****, Glasgow, United Kingdom (Student Award)*
Generalised Photon Subtraction for Heating or Cooling Thermal Light.

12:25 - 12:45 ***Radim Hošák****, Olomouc, Czech Republic (Student Award)*
The optimal strategy for photonic quantum tomography

12:45 - 14:15 LUNCH BREAK

Session: Quantum Information Processing & Single Photon Sources **Chair: Edo Waks**

14:15 - 14:45 ***Rainer Blatt**, Innsbruck, Austria (Invited Talk)*
Quantum Computation and Quantum simulation with trapped ions

14:45 - 15:05 ***Filip Sośnicki**, Warszawa, Poland (Student Award)*
Electro-optic time-lensing system for spectral shaping of quantum light

15:05 - 15:25 ***Thomas Lettner**, Stockholm, Sweden (Student Award)*
Bright and tunable single-photon sources for quantum optics

15:25 - 15:45 ***Junmin WANG**, Tai Yuan, China*
Indistinguishability of 852-nm single-photon based on a single cesium atom in a magic-wavelength optical tweezer

15:45 - 16:20 COFFEE BREAK

Session: Single Photon Sources **Chair: Rainer Blatt**

16:20 - 16:50 ***Rinaldo Trotta**, Rome, Italy (Invited Talk)*
Quantum Teleportation and Entanglement Swapping with Photons from a Quantum Dot

16:50 - 17:10 ***Eva Schöll**, Stockholm, Sweden (Student Award)*
Resonance fluorescence of GaAs/AlGaAs quantum dots with near-unity photon indistinguishability

17:10 - 17:30 ***Severin Daiss**, Garching, Germany (Student Award)*
Cavity Distillation of Single Photons

17:30 - 17:50 ***Anna Musiał**, Wroclaw, Poland*
Towards practical QD-based single-photon source at telecom O-band

18:45 - … WELCOMING RECEPTION

Thursday, May 23

Session: Quantum Metrology **Chair: John Rarity**

09:00 - 09:30 ***Giovanna Morigi**, Saarbrücken, Germany (Invited Talk)*
Quantum simulation of extreme matter

09:30 - 09:50 ***Janik Wolters**, Basel, Switzerland*
Heterogeneous quantum systems for information processing

09:50 - 10:10 ***Martin von Helversen**, Berlin, Germany (Student Award)*
Quantum Metrology of Solid-State Single-Photon Sources using Photon-Number-Resolving Detectors

10:10 - 10:30 ***Subhadip Ghosh**, Jatni, India*
Insight to the Photo-physical Processes in Semiconductor Quantum Dots and Carbon Dots

10:30 - 11:05 COFFEE BREAK

Session: Quantum Communications **Chair: Hugo Zbinden**

11:05 - 11:35 ***J. G. Rarity**, Bristol, United Kingdom (Invited Talk)*
Quantum photonics: from fundamentals to technologies

11:35 - 11:55 ***Mihir Bhaskar**, Cambridge, MA, United States (Student Award)* A diamond nanophotonic quantum network node

11:55 - 12:15 ***Tobias Heindel**, Berlin, Germany*
Towards Quantum Communication Networks Exploiting Solid-State Quantum-Light Sources

12:15 - 12:35 ***Jan Arenskötter**, Saarbrücken, Germany (Student Award)* Quantum network tools with single atoms and single photons

12:35 - 12:45 GROUP PICTURE

12:45 - 14:15 LUNCH BREAK

Session: Quantum Communications & QKD I **Chair: Giovanna Morigi**

14:15 - 14:45 ***Hugo Zbinden**, Genève, Switzerland (Invited Talk)*
Single Photon Detection for long distance and high rate Quantum Key Distribution

14:45 - 15:05 ***Luca Mazzarella**, Glasgow, United Kingdom*
Single Photon Sources for Space Quantum Communication

15:05 - 15:25 ***Mariella Minder**, Cambridge, United Kingdom (Student Award)*
Experimental quantum key distribution beyond the repeaterless rate-loss limit

15:25 - 15:45 ***Karolina Sedziak-Kacprowicz**, Torun, Poland (Student Award)* Single photon temporal wavepacket control and its application for qudit encoding

15:45 - 16:00 COFFEE BREAK

16:00 - 18:30 POSTER SESSION and PRODUCT DEMONSTRATION
16:00 - 17:15 odd poster numbers
17:15 - 18:30 even poster numbers

Friday, May 24

Session: Quantum Sensing **Chair: Val Zwiller**

09:00 - 09:30 ***Fedor Jelezko**, Ulm, Germany (Invited Talk)*
Diamond quantum sensors

09:30 - 09:50 ***Aron Vanselow**, Berlin, Germany (Student Award)*
Frequency-domain optical coherence tomography with undetected photons

09:50 - 10:10 ***Maria Gieysztor**, Toruń, Poland (Student Award)*
Analysis of the NV centers' fluorescence dynamics on a single photon level

10:10 - 10:30 ***Yuuki Tokunaga**, Tokyo, Japan*
Figure of merit for the efficiency of single photon generation using cavity-QED systems

10:30 - 11:05 COFFEE BREAK

Session: Single Photon Detectors / Sources **Chair: Fedor Jelezko**

11:05 - 11:35 ***Jonathan Matthews**, Bristol, United Kingdom (Invited Talk)*
Integrated homodyne detection for large scale silicon quantum photonic technologies

11:35 - 11:55 ***Chris Müller**, Berlin, Germany (Student Award)*
Time correlation of photon pairs from a triply-resonant optical parametric oscillator far below threshold

11:55 - 12:15 ***Karsten B. Dideriksen**, Copenhagen, Denmark (Student Award)* Towards an on-demand single-photon source based on room-temperature atomic vapours

12:15 - 12:35 ***Lucas Lange**, Munich, Germany (Student Award)*
Controlling Photon Antibunching from 1D Emitters using Optical Antennas

12:35 - 14:05 LUNCH BREAK

Session: Single Photon Detectors **Chair: Jonathan Matthews**

14:05 - 14:35	***Valery Zwiller**, Stockholm, Sweden (Invited Talk)* Integrated quantum photonics: qantum emitters, detectors and circuits
14:35 - 14:55	***Angelo Gulinatti,** Milano, Italy* A silicon technology for high-detection efficiency and low-timing jitter SPAD arrays
14:55 - 15:15	***Ivan Iakoupov**, Atsugi, Japan* Sequential microwave single-photon detector
15:15 - 15:35	***Thomas Ortlepp**, Erfurt, Germany* Fiber chip coupling of a superconducting single photon detector
15:35 - 15:45	STUDENT AWARD CEREMONY
15:45	END OF SYMPOSIUM

ORAL PRESENTATION (in alphabetical order)

Presenter	**Titel**
Arenskötter, Jan	Quantum network tools with single atoms and single photons
Bhaskar, Mihir	A diamond nanophotonic quantum network node
Blatt, Rainer	Quantum Computation and Quantum simulation with trapped ions
Calarco, Tommaso	Quantum technologies and quantum control
Daiss, Severin	Cavity Distillation of Single Photons
Dideriksen, Karsten B.	Towards an on-demand single-photon source based on room-temperature atomic vapours
Ghosh, Subhadip	Insight to the Photo-physical Processes in Semiconductor Quantum Dots and Carbon Dots
Gieysztor, Maria	Analysis of the NV centers' fluorescence dynamics on a single photon level
Gulinatti, Angelo	A silicon technology for high-detection efficiency and low-timing jitter SPAD arrays
Heindel, Tobias	Towards Quantum Communication Networks Exploiting Solid-State Quantum-Light Sources
Hošák, Radim	The optimal strategy for photonic quantum tomography
Iakoupov, Ivan	Sequential microwave single-photon detector
Jelezko, Fedor	Diamond quantum sensors
Lange, Lucas	Controlling Photon Antibunching from 1D Emitters using Optical Antennas
Lettner, Thomas	Bright and tunable single-photon sources for quantum optics
Matthews, Jonathan	Integrated homodyne detection for large scale silicon quantum photonic technologies
Mazzarella, Luca	Single Photon Sources for Space Quantum Communication
Minder, Mariella	Experimental quantum key distribution beyond the repeaterless rate-loss limit

Presenter	Titel
Morigi, Giovanna	Quantum simulation of extreme matter
Mrowiński, Paweł	Chiral light-matter coupling in deterministic quantum dot waveguides
Müller, Chris	Time correlation of photon pairs from a triply-resonant optical parametric oscillator far below threshold
Musiał, Anna	Towards practical QD-based single-photon source at telecom O-band
Ortlepp, Thomas	Fiber chip coupling of a superconducting single photon detector
Placke, Marlon	Dispersion-engineered AlGaAs-on-insulator waveguides for integrated nonlinear quantum optics
Rarity, J. G.	Quantum photonics: from fundamentals to technologies
Schöll, Eva	Resonance fluorescence of GaAs/AlGaAs quantum dots with near-unity photon indistinguishability
Sedziak-Kacprowicz, Karolina	Single photon temporal wavepacket control and its application for qudit encoding
Sośnicki, Filip	Electro-optic time-lensing system for spectral shaping of quantum light
Švarc, Vojtěch	Low-latency 100ps-switchable tunable coupler for active photonic routing
Tatsi, Gioan	Generalised Photon Subtraction for Heating or Cooling Thermal Light
Tokunaga, Yuuki	Figure of merit for the efficiency of single photon generation using cavity-QED systems
Trotta, Rinaldo	Quantum Teleportation and Entanglement Swapping with Photons from a Quantum Dot
Vanselow, Aron	Frequency-domain optical coherence tomography with undetected photons
von Helversen, Martin	Quantum Metrology of Solid-State Single-Photon Sources using Photon-Number-Resolving Detectors
Waks, Edo	Quantum photonics with strongly interacting photons

Presenter	Titel
WANG, Junmin	Indistinguishability of 852-nm single-photon based on a single cesium atom in a magic-wavelength optical tweezer
Wolters, Janik	Heterogeneous quantum systems for information processing
Zbinden, Hugo	Single Photon Detection for long distance and high rate Quantum Key Distribution
Zwiller, Valery	Integrated quantum photonics: qantum emitters, detectors and circuits

POSTER PRESENTATION (in alphabetical order)

Presenter	Presentation time	Poster #	Titel
Burakowski, Marek	16:00-17:15	P1	Magneto-optics of telecom C-band InAs/InP quantum dots
Teodoro, M. D.	17:15-18:30	P2	Magnetically spin controlled excitation transfer in hybrid quantum dot-quantum well nanostructures
Flaschman, Rasmus	16:00-17:15	P3	A novel fiber-to-superconducting single photon detector coupling mechanism
Georgieva, Hristina	17:15-18:30	P4	Towards an absolute single-photon source based on an InGaAs quantum dot for quantum radiometry
Gündoğan, Mustafa	17:15-18:30	P5	Transform-limited single photons from a tin-vacancy spin in diamond
Holewa, Pawel	16:00-17:15	P6	Optical properties of MOVPE grown InAs/InP quantum dots desired for single photon emitters in telecom bands
Jasiński, Jakub	17:15-18:30	P7	Enhanced extraction efficiency in the telecommunication range from quantum dot-mesas fabricated by in-situ electron-beam lithography

Presenter	Presentation time	Poster #	Titel
Kaufmann, Paul	16:00-17:15	P8	Quantum Spectroscopy
Korneev, Alexander	17:15-18:30	P9	Large area superconducting single-photon detector for free-space and multimode fibre coupling
Kundu, Sanjukta	16:00-17:15	P10	Self-referenced measurement of spatial structure of a single photon beam
Kupko, Timm	17:15-18:30	P11	Building Blocks for Practical Single-Photon QKD
Kviatkovsky, Inna	16:00-17:15	P12	Mid-IR Quantum Imaging
Lin, Pei-Yi	17:15-18:30	P13	The SNSPD technology - Photon detection with efficiency and time resolution
Mann, Felix	16:00-17:15	P14	A chip-based entangled photon source
Margaryan, Amur	17:15-18:30	P15	Radio Frequency Timer for keV Electrons
Mikulicz, Monika	16:00-17:15	P16	Telecom O-band emission from a single fiber-coupled GaAs-based quantum dot-mesa in a compact Stirling cryocooler
Misiaszek, Marta	17:15-18:30	P17	Heralded single photon source for visible and infrared range.
Orphal, Laura	17:15-18:30	P18	Reduction of spectral diffusion by applying a sequence of optical control pulses
Rauhaus, William	16:00-17:15	P19	Dephasing dynamics of electron and hole spin qubits in self-assembled quantum dots
Rhazi, Raouia	17:15-18:30	P20	Improvement of the critical temperature of NbN and NbTiN films on AlN for superconducting nanowire single photon detectors
Rodiek, Beatrice	16:00-17:15	P21	Angular emission of nitrogen-vacancy centers in nanodiamonds

Presenter	Presentation-time	Poster #	Titel
Salamon, Hanna	17:15-18:30	P22	Microphotoluminescence excitation spectroscopy of single InGaAs/GaAs quantum dots in the telecommunicati-on spectral range
Schell, Andreas W.	16:00-17:15	P23	Hybrid Assembly of Elements for Quantum Networks
Thomas, Philip	17:15-18:30	P24	Memory for photonic polarization qubits with long coherence time
Tillmann, Max	16:00-17:15	P25	QuPAD – high bandwidth photon detection enabled by a massively parallelized system
Wang, Yanhua	17:15-18:30	P26	An Optical Rotation readout Based On Alkali Vapor Cell
Pfenning, Andreas	16:00-17:15	P27	Photon Number Resolving Resonant Tunneling Diode Single Photon Detectors
Laha, Apurba	17:15-18:30	P28	3-Dimensionally confined GaN quantum dots embedded in AlN towards realization of the single-photon source operating at the higher temperature (>200K)

Organized by

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