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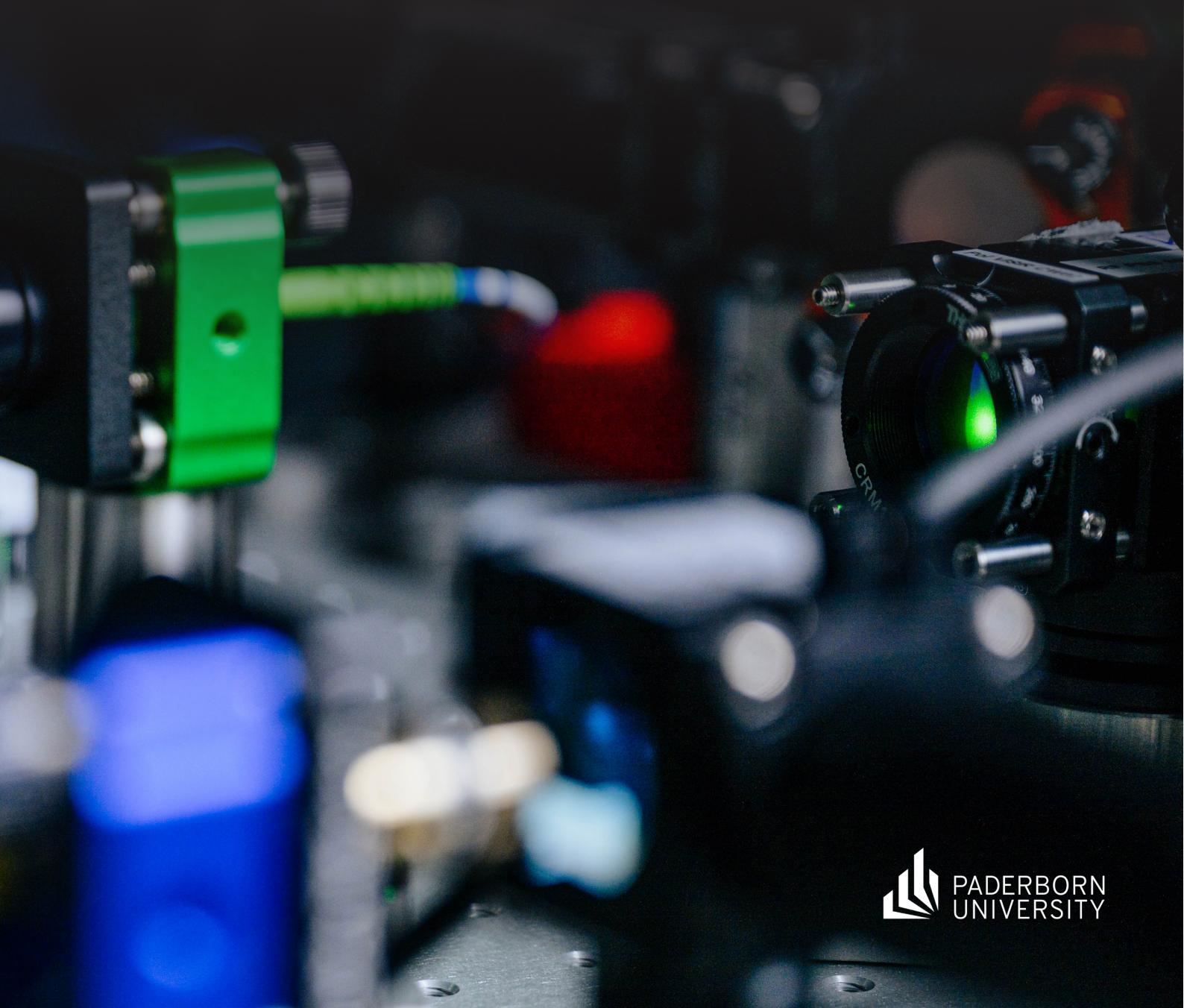
PhoQS
INSTITUTE FOR PHOTONIC QUANTUM SYSTEMS

Sept. 2–4, 2024 | Paderborn, Germany

# Arctique PhoQS 2024

1. Advanced Research on Cryogenic Temperatures Integrated Quantum Electronics (Arctique) Summer School



PADERBORN UNIVERSITY

# The Summer School Program

| Time | Monday, 02.09.2024 |
|---|---|
| 08:00 | Venue opening |
| 08:45 | Opening remarks |
| 9:00 | Christian Heyn \| University of Hamburg<br>Cone-shell quantum dots: MBE growth, optical properties, and wave-function tuning by external fields |
| 10:30 | Break |
| 11:00 | Doris Reiter \| Technical University Dortmund<br>Entangled photons from solid-state quantum emitters |
| 12:00 | Lunch |
| 12:30 | Networking |
| 13:00 | |
| 13:30 | |
| 16:00 | Margherita Mazzera \| Heriot-Watt University<br>Strategies and challenges for the realisation of solid-state quantum memories |
| 17:30 | Break |
| 18:00 | Patrick Ledingham \| University of Southampton<br>Warm Vapour Quantum Memories |
| 18:45 | Gregor Pieplow \| Humboldt University of Berlin<br>Creating and Applying Photonic Cluster States: Advances and Techniques |
| 19:30 | |
| 20:15 | |
| 21:00 | |
| 22:00 | |

| Time | Tuesday, 03.09.2024 | Wednesday, 04.09.2024 |
|---|---|---|
| 08:00 | | |
| 08:45 | | |
| 09:00 | Carsten Schuck \| University of Münster<br>Integrated Superconducting Single Photon Detectors | Sevag Gharibian \| Paderborn University<br>Quantum algorithms: What's quantum complexity theory got to do with it? |
| 10:30 | Break | Break |
| 11:00 | Carlos Errando-Herranz \| Delft University of Technology<br>Quantum information processing with color centers | Eden Figueroa \| Stonybrook University<br>How to build physics-centric Quantum Networks |
| 12:00 | Lunch | |
| 12:30 | Networking | Lunch |
| 13:00 | | Klaus Jöns \| Paderborn University<br>Outlook on Advanced Research on Cryogenic Temperatures Integrated Quantum Electronics |
| 13:30 | | Venue Closing |
| 16:30 | Jan Sperling \| Paderborn University<br>Superpositions in quantum optics | |
| 17:30 | Break | |
| 18:00 | Hubert Krenner \| University of Münster<br>Quantum Dot Optomechanics | |
| 18:45 | | |
| 19.30 | Rinaldo Trotta \| Sapienza University of Roma<br>Quantum communication with real photon sources | |
| 20:15 | Dinner | |
| 21:00 | Poster Session | |
| 22:00 | | |

# Poster Session

**[1] Yannick Strocka**
Optimal Control Aspects for Cluster State Generation with Group-IV Color Centers in Diamond

**[2] Anthony Del Valle**
Advanced Laser Synchronization System for Multinode Interaction

**[3] Matteo Pirro**
Towards scalable quantum information processing with color centers

**[4] Quentin Richter**
SUPER in the Jaynes-Cummings Model

**[5] Noah Spitzner**
Heterogeneous intergration of semiconductor and superconducting thin films in LiNbO3

**[6] Daniel Groll**
A model study on multiple optically driven emitters coupled to a common phononic environment

**[7] Kevin Jürgens**
Theory of Phonon Sidebands in the Absorption Spectra of Moiré Exciton-Polaritons

**[8] Dennis Deutsch**
Telecom C-band emission from droplet etched quantum dots in the InP/InAlAs/InGaAs System

**[9] Vasanthan Devaraj**
Breakthrough Plasmonic Nanocavity Designs (Gap ≥ 5 nm) Exhibiting Giant Near-Field Enhancement for Quantum emitter enhancement

**[10] Lorenzo Procopio**
Can extreme non-linear optics tell us something about black holes?

### [11] Alessandro Laneve
Polarization-wavevector correlation in entangled photons from atomic-like emitters

### [12] Michele Rota
Building the quantum repeater: advancements in the entangled-photon sources based on GaAS epitaxial quantum dots

### [13] Rohit Prasat
Predictive Modeling, Detection, and Fidelity Optimization of Linear Cluster States for Photonic Quantum Computing: Towards Optimal Experimental Parameters

### [14] Mohamed Belhassen
Investigation of microwave spin control of unstrained negatively charged group-IV color centers in diamond

### [15] Ioannis Caltzidis
Storage of picosecond optial pulses in a rubidium-based electromagnetically induced transparency (EIT) memory

### [16] Juan Nicolás Claro Rodríguez
Imaging symmetric and antisymmetric behaviour of orbital-angular-momentum-entangled two-photon states

### [17] Santiago Bermúdez Feijóo
Entanglement in Resonance Fluorescence

### [18] Oscar Camacho Ibarra
Towards solid-state quantum emitters strongly coupled to crossed nanobeam cavities

### [19] Marc Ebert
HedwiQ Quantum Aktiv – Outreach- Concepts and Open Innovation for quantum technologies

### [20] Hrachya Zakaryan
Non-symmetric GHZ states; weighted hypergraph and controlled-unitary graph representations

### [21] Myriam Rihany
Lithium niobate-on-insulator integrated single photon detectors for quantum photonics

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