

# Stanford

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## Samuel Gyger

Postdoctoral Scholar, Applied Physics

### Bio

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#### PROFESSIONAL EDUCATION

- Master of Science, ETH Zurich (2017)
- Bachelor of Science, ETH Zurich (2015)
- Doctor of Philosophy, Kungliga Tekniska Hogskolan (2022)
- Doctor of Philosophy, KTH Royal Institute of Technology, Stockholm, Sweden , Physics / Integrated photonics for quantum optics. (2022)

#### STANFORD ADVISORS

- Amir Safavi-Naeini, Postdoctoral Faculty Sponsor

### Research & Scholarship

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#### RESEARCH INTERESTS

- Alternative Schooling
- Data Sciences
- Research Methods

### Publications

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#### PUBLICATIONS

- **Wavelength-Sensitive Superconducting Single-Photon Detectors on Thin Film Lithium Niobate Waveguides.** *Nano letters*  
Prencipe, A., Gyger, S., Baghban, M. A., Zichi, J., Zeuner, K. D., Lettner, T., Schweickert, L., Steinhauer, S., Elshaari, A. W., Gallo, K., Zwiller, V.  
2023
- **Metropolitan single-photon distribution at 1550 nm for random number generation** *APPLIED PHYSICS LETTERS*  
Gyger, S., Zeuner, K. D., Lettner, T., Bensoussan, S., Carlnas, M., Ekemar, L., Schweickert, L., Hedlund, C., Hammar, M., Nilsson, T., Almlöf, J., Steinhauer, S., Llosera, et al  
2022; 121 (19)
- **Strain-Controlled Quantum Dot Fine Structure for Entangled Photon Generation at 1550 nm.** *Nano letters*  
Lettner, T., Gyger, S., Zeuner, K. D., Schweickert, L., Steinhauer, S., Reuterskiöld Hedlund, C., Stroj, S., Rastelli, A., Hammar, M., Trotta, R., Jöns, K. D., Zwiller, V.  
2021; 21 (24): 10501-10506
- **Efficient and versatile toolbox for analysis of time-tagged measurements** *JOURNAL OF INSTRUMENTATION*  
Lin, Z., Schweickert, L., Gyger, S., Jons, K. D., Zwiller, V.  
2021; 16 (8)

- **Reconfigurable photonics with on-chip single-photon detectors.** *Nature communications*  
Gyger, S., Zichi, J., Schweickert, L., Elshaari, A. W., Steinhauer, S., Covre da Silva, S. F., Rastelli, A., Zwiller, V., Jöns, K. D., Errando-Herranz, C.  
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- **Single-mode squeezed-light generation and tomography with an integrated optical parametric oscillator.** *Science advances*  
Park, T., Stokowski, H., Ansari, V., Gyger, S., Multani, K. K., Celik, O. T., Hwang, A. Y., Dean, D. J., Mayor, F., McKenna, T. P., Fejer, M. M., Safavi-Naeini, A.  
2024; 10 (11): ead11814
- **Superconducting single-photon detectors fabricated via a focused electron beam-induced deposition process** *AIP ADVANCES*  
Steinhauer, S., Iovan, A., Gyger, S., Zwiller, V.  
2023; 13 (4)
- **Fractal superconducting nanowire single-photon detectors working in dual bands and their applications in free-space and underwater hybrid LIDAR.** *Optics letters*  
Zou, K., Hao, Z., Feng, Y., Meng, Y., Hu, N., Steinhauer, S., Gyger, S., Zwiller, V., Hu, X.  
2023; 48 (2): 415-418
- **Phonon heat capacity and self-heating normal domains in NbTiN nanostrips** *SUPERCONDUCTOR SCIENCE & TECHNOLOGY*  
Sidorova, M., Semenov, A. D., Huebers, H., Gyger, S., Steinhauer, S.  
2022; 35 (10)
- **Observation of Anderson phase in a topological photonic circuit** *PHYSICAL REVIEW RESEARCH*  
Gao, J., Xu, Z., Smirnova, D. A., Leykam, D., Gyger, S., Zhou, W., Steinhauer, S., Zwiller, V., Elshaari, A. W.  
2022; 4 (3)
- **Current Crowding in Nanoscale Superconductors within the Ginzburg-Landau Model** *PHYSICAL REVIEW APPLIED*  
Jonsson, M., Vedin, R., Gyger, S., Sutton, J. A., Steinhauer, S., Zwiller, V., Wallin, M., Lidmar, J.  
2022; 17 (6)
- **Fractal Superconducting Nanowires Detect Infrared Single Photons with 84% System Detection Efficiency, 1.02 Polarization Sensitivity, and 20.8 ps Timing Resolution** *ACS PHOTONICS*  
Meng, Y., Zou, K., Hu, N., Xu, L., Lan, X., Steinhauer, S., Gyger, S., Zwiller, V., Hu, X.  
2022; 9 (5): 1547-1553
- **Full-Stokes polarimetric measurements and imaging using a fractal superconducting nanowire single-photon detector** *OPTICA*  
Hu, N., Meng, Y., Zou, K., Feng, Y., Hao, Z., Steinhauer, S., Gyger, S., Zwiller, V., Hu, X.  
2022; 9 (4): 346-351
- **Giant Rydberg excitons in Cu<sub>2</sub>O probed by photoluminescence excitation spectroscopy** *PHYSICAL REVIEW B*  
Versteegh, M. M., Steinhauer, S., Bajo, J., Lettner, T., Soro, A., Romanova, A., Gyger, S., Schweickert, L., Mysyrowicz, A., Zwiller, V.  
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- **Magnetoconductance and photoresponse properties of disordered NbTiN films** *PHYSICAL REVIEW B*  
Sidorova, M., Semenov, A. D., Huebers, H., Gyger, S., Steinhauer, S., Zhang, X., Schilling, A.  
2021; 104 (18)
- **Enhancing Si<sub>3</sub>N<sub>4</sub> Waveguide Nonlinearity with Heterogeneous Integration of Few-Layer WS<sub>2</sub>.** *ACS photonics*  
Wang, Y., Pelgrin, V., Gyger, S., Uddin, G. M., Bai, X., Lafforgue, C., Vivien, L., Jöns, K. D., Cassan, E., Sun, Z.  
2021; 8 (9): 2713-2721
- **On-Demand Generation of Entangled Photon Pairs in the Telecom C-Band with InAs Quantum Dots** *ACS PHOTONICS*  
Zeuner, K. D., Jons, K. D., Schweickert, L., Hedlund, C., Lobato, C., Lettner, T., Wang, K., Gyger, S., Scholl, E., Steinhauer, S., Hammar, M., Zwiller, V.  
2021; 8 (8): 2337-2344
- **Superconducting nanowire single-photon detectors: A perspective on evolution, state-of-the-art, future developments, and applications** *APPLIED PHYSICS LETTERS*  
Esmail Zadeh, I., Chang, J., Los, J. N., Gyger, S., Elshaari, A. W., Steinhauer, S., Dorenbos, S. N., Zwiller, V.  
2021; 118 (19)
- **Deterministic Integration of hBN Emitter in Silicon Nitride Photonic Waveguide** *ADVANCED QUANTUM TECHNOLOGIES*

- Elshaari, A. W., Skalli, A., Gyger, S., Nurizzo, M., Schweickert, L., Esmail Zadeh, I., Svedendahl, M., Steinhauer, S., Zwiller, V.  
2021; 4 (6)
- **Resonance Fluorescence from Waveguide-Coupled, Strain-Localized, Two-Dimensional Quantum Emitters.** *ACS photonics*  
Errando-Herranz, C., Schöll, E., Picard, R., Laini, M., Gyger, S., Elshaari, A. W., Branny, A., Wennberg, U., Barbat, S., Renaud, T., Sartison, M., Brotons-Gisbert, M., Bonato, et al  
2021; 8 (4): 1069-1076
  - **Progress on large-scale superconducting nanowire single-photon detectors** *APPLIED PHYSICS LETTERS*  
Steinhauer, S., Gyger, S., Zwiller, V.  
2021; 118 (10)
  - **Gate-Switchable Arrays of Quantum Light Emitters in Contacted Monolayer MoS<sub>2</sub> van der Waals Heterodevices.** *Nano letters*  
Hötger, A., Klein, J., Barthelmi, K., Sigl, L., Sigger, F., Männer, W., Gyger, S., Florian, M., Lorke, M., Jahnke, F., Taniguchi, T., Watanabe, K., Jöns, et al  
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  - **Engineering the Luminescence and Generation of Individual Defect Emitters in Atomically Thin MoS<sub>2</sub>** *ACS PHOTONICS*  
Klein, J., Sigl, L., Gyger, S., Barthelmi, K., Florian, M., Rey, S., Taniguchi, T., Watanabe, K., Jahnke, F., Kastl, C., Zwiller, V., Jons, K. D., Mueller, et al  
2021; 8 (2): 669-677
  - **Temporal array with superconducting nanowire single-photon detectors for photon-number resolution** *PHYSICAL REVIEW A*  
Jonsson, M., Swillo, M., Gyger, S., Zwiller, V., Bjork, G.  
2020; 102 (5)
  - **Dispersion engineering of superconducting waveguides for multi-pixel integration of single-photon detectors** *APL PHOTONICS*  
Elshaari, A. W., Iovan, A., Gyger, S., Zadeh, I., Zichi, J., Yang, L., Steinhauer, S., Zwiller, V.  
2020; 5 (11)
  - **Atomistic defects as single-photon emitters in atomically thin MoS<sub>2</sub>** *APPLIED PHYSICS LETTERS*  
Barthelmi, K., Klein, J., Hoetger, A., Sigl, L., Sigger, F., Mitterreiter, E., Rey, S., Gyger, S., Lorke, M., Florian, M., Jahnke, F., Taniguchi, T., Watanabe, et al  
2020; 117 (7)
  - **NbTiN thin films for superconducting photon detectors on photonic and two-dimensional materials** *APPLIED PHYSICS LETTERS*  
Steinhauer, S., Yang, L., Gyger, S., Lettner, T., Errando-Herranz, C., Jons, K. D., Baghban, M., Gallo, K., Zichi, J., Zwiller, V.  
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  - **Rydberg excitons in Cu<sub>2</sub>O microcrystals grown on a silicon platform** *COMMUNICATIONS MATERIALS*  
Steinhauer, S., Versteegh, M. M., Gyger, S., Elshaari, A. W., Kunert, B., Mysyrowicz, A., Zwiller, V.  
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  - **GaAs Quantum Dot in a Parabolic Microcavity Tuned to Rb-87 D-1** *ACS PHOTONICS*  
Lettner, T., Zeuner, K. D., Scholl, E., Huang, H., Scharmer, S., da Silva, S., Gyger, S., Schweickert, L., Rastelli, A., Jons, K. D., Zwiller, V.  
2020; 7 (1): 29-35
  - **Reconfigurable frequency coding of triggered single photons in the telecom C-band** *OPTICS EXPRESS*  
Gyger, S., Zeuner, K. D., Jons, K. D., Elshaari, A. W., Paul, M., Popov, S., Hedlund, C., Hammar, M., Ozolins, O., Zwiller, V.  
2019; 27 (10): 14400-14406
  - **Strain-Tunable Quantum Integrated Photonics** *NANO LETTERS*  
Elshaari, A. W., Buyukozer, E., Zadeh, I., Lettner, T., Zhao, P., Scholl, E., Gyger, S., Reimer, M. E., Dalacu, D., Poole, P. J., Jons, K. D., Zwiller, V.  
2018; 18 (12): 7969-7976