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Experimental quantum position verification: practical challenges and single-photon correlations

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Curriculum Vitae

Kirsten Naomi Kanneworff

30-08-1996 Born in Zwijndrecht, the Netherlands.

Education

2008–2014 VWO Diploma, Dalton Lyceum Barendrecht, Barendrecht

2014–2017 Bachelor of Science in Physics

Universiteit Leiden

Thesis: The viability of single nucleotide detection using a graphene nanogap

2017–2020 Master of Science in Physics (cum laude)

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Thesis: Electrical characterisation and critical behaviour of
superconducting single photon detectors

Thesis: Towards experimental quantum position verification

2021–2026 PhD in Physics

Universiteit Leiden

Thesis: Experimental quantum position verification: practical challenges
and single-photon correlations

List of publications

1. A. Bellunato, S. Vrbica, C. Sabater, E. W. de Vos, R. Fermin, **K. N. Kanneworff**, F. Galli, J. M. van Ruitenbeek and G. F. Schneider, Dynamic tunneling junctions at the atomic intersection of two twisted graphene edges, Nano Lett. 18, 4, 2505-2510 (2018).
2. **Kanneworff, K.**, Poortvliet, M., Bouwmeester, D., Allerstorfer, R., Lunel, P. V., Speelman, F., Buhrman, H., Steindl, P. & Löffler, W. Towards Experimental Demonstration of Quantum Position Verification Using Single Photons. Quantum Sci. Technol. 10, 045004 (2025).

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Research is never done in isolation, and as part of my PhD training, I had the pleasure of supervising several bachelor's and master's students. **Killian** worked on understanding QPV through modelling. **Alicja**, **Camiel**, and **Hubertus** focused on polarization in optics. Alicja developed a model to predict outcomes after combinations of waveplates. Camiel measured the stability of polarization modulators and long optical fibres, as discussed in Chapter 3, and with Hubertus we investigated polarization mode dispersion, also discussed in that chapter. I am grateful to all of them for their contributions and enthusiasm.

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