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

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Stellingen

Behorend bij het proefschrift

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

1. Processing time and the subsequent need for a safety radius are often neglected in position verification protocols. *Chapter 2 of this thesis.*
2. Building a perfect interferometer and modelling an imperfect one are comparable routes, each with different costs. *Chapter 4 of this thesis.*
3. Correlation measurements over long time scales are important for properly normalising the 2nd-order correlation function. *Chapter 5 of this thesis.*
4. Even with experimental imperfections, novel research topics can be addressed. *Chapter 6 of this thesis.*
5. Quantum position verification is currently only suitable for well-guarded immobile properties. *Cowperthwaite et al. arXiv: 2309.10070 (2023).*
6. Theoretical insecurity does not always imply practical insecurity. *Buhrman et al., SIAM J. Comput. 43, 150 (2014).*
7. It is easy to lose a factor of two if well-known equations are adapted to include experimental imperfections. *Tomm et al., Nat. Nanotechnol. 16, 399 (2021).*
8. Two-photon quantum position verification protocols are significantly more difficult for drone-based applications. *Conrad et al. arXiv: 2505.17587 (2025).*
9. Gender-representation rules unintentionally reinforce gender inequities in workload distribution.
10. Because both experimental physics and textile crafts require planning, visualization, and iterative refinement, proficiency in one can support development in the other.
11. A well-supported PhD environment should function as a safe space to confront personal strengths and limitations.

*Kirsten Naomi Kanneworff
Leiden, 18 February 2026*