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Universiteit Leiden



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Title: Quantum dot microcavity control of photon statistics

Issue Date: 2018-12-20

Curriculum Vitae

Henk Snijders was born on 18th December 1990 in Delft. After completing his pre-university education (VWO) at College het Loo in Voorburg, he started studying physics at the University of Leiden. In 2012 he received his Bachelor's degree with a research project on 'tuning the oxidation aperture of micropillar cavities'. Henk continued his studies for his MSc degree at the University of Leiden. In September 2015 he received his Master's degree, cum laude, after doing three research projects. In the first project, performed in the group of Prof. Jan Aarts at the University of Leiden, he investigated the possibility of generating triplet superconductivity using magnetic domains in Permalloy. In the group of Teun Klapwijk at the TU Delft he did his second research project. In the project he did simulations on the local response in a microwave impedance microscope. The third project, with the title Conductance in pilin of *Geobacter sulfurreducens*, was performed in the group of Dr. Bertus Beaumont at the TU Delft, and dealt with certain proteins formed by bacteria with a metal-like conductivity. On November 4 2014 Henk was awarded a Casimir PhD position, after writing a research proposal. After that, he started with a PhD in the group of Prof. Dirk Bouwmeester at the University of Leiden.

List of publications

1. M.P. Bakker, D.J. Suntrup, H. Snijders, T.-A. Truong, P.M. Petroff, M.P. van Exter and D. Bouwmeester, Monitoring the formation of oxide apertures in micropillar cavities, *Appl. Phys. Lett.* **102**, 101109 (2013).
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3. S. Voltan, C. Cirillo, H. J. Snijders, K. Lahabi, A. García-Santiago, J. M. Hernández, C. Attanasio, and J. Aarts, Emergence of the stripe-domain phase in patterned permalloy films. *Phys. Rev. B* **94**, 094406 (2016).
4. M.P. Bakker, H. Snijders, W. Löffler, A.V. Barve, L.A. Coldren, D. Bouwmeester and M.P. van Exter, Homodyne detection of coherence and phase shift of a quantum dot in a cavity. *Optics Letters* **40**, 3173 (2015).
5. H.J. Snijders, J.A. Frey, J. Norman, M.P. Bakker, E.C. Langman, A.C. Gossard, J.E. Bowers, M.P. van Exter, D. Bouwmeester and W. Löffler, Purification of a single-photon nonlinearity. *Nature Communications* **7**, 12578 (2016).
6. H.J. Snijders, J.A. Frey, J. Norman, V.P. Post, A.C. Gossard, J.E. Bowers, M.P. van Exter, W. Löffler and D. Bouwmeester, Fiber-Coupled Cavity-QED Source of Identical Single Photons, *Physical Review Applied* **9**, 031002 (2018).
7. H.J. Snijders, J.A. Frey, J. Norman, H. Flayac, V. Savona, A.C. Gossard, J. E. Bowers, M.P. van Exter, D. Bouwmeester and W. Löffler. Observation of the Unconventional Photon Blockade. *Phys. Rev. Lett.* **121**, 043601 (2018).
8. J.A. Frey, H.J. Snijders, J. Norman, A.C. Gossard, J.E. Bowers, W. Löffler and D. Bouwmeester. Electro-optic polarization tuning of microcavities with a single quantum dot. *Optics Letters* **43**, 4280–4283 (2018).

Acknowledgements

Because of my PhD research I share a lot of fond memories with many people from the physics department at the University of Leiden. I would like to express my gratitude here. First of all, I would like to thank my Promotor Dirk Bouwmeester and Co-promotor Wolfgang Löffler for their continued support during my PhD. Their extensive knowledge, insight, enthusiasm were invaluable and of great inspiration to me. Especially the almost daily interaction with Wolfgang significantly boosted my scientific skills to perform independent research.

Other senior staff members I would like to thank for useful comments and suggestions are Martin van Exter, Michiel de Dood and Gerard Nienhuis. Furthermore, I would like to thank Harmen van der Meer for technical support with the experiments. Also, many thanks to all other people from the FMD and ELD for support on various electrical and mechanical problems. Special thanks to Henriette van Leeuwen for the help with all the administrative issues. Many thanks also to the QO group technician Kier Heck for explaining about filters and phase-locked loops. During conferences I often had the privilege to share a room with him.

As a PhD student I had the pleasure to work with various Master and Bachelor students. The Master students I worked with are Marios Kounalakis, Vincent Post, David Kok, Marnix van de Stolpe and Stefano Polla. Vincent Post performed initial experiments on the fiber coupling which led to the results published in Chapter 7. David and Marnix helped formulating an extension to the semi-classical model where we incorporate multiple transitions and two orthogonally polarized cavity modes. This work is presented in Chapter 2 of this thesis. Together with Stefano and Bachelor student Daan Barsukoff Poniatowsky we carried out initial experiments to create photon cluster states. Results of these experiments are not presented in this thesis but I hope to see first experimental results before my defense. With Bachelor students Youandi van der Tang and Steven Riedijk I performed many interesting experiments on quantum dots.

Furthermore, I would like to thank all my colleagues in the QO group with whom I worked together: Jelmer Renema, Frank Buters, Hedwig Eerkens, Vasco Tenner, Chris Smiet, Flavio Mariani, Qiang Wang, Gesa Welker, Nelli Bossert, Jan Willem Dalhuisen, Vincent Kooij, Vitaly Fedoseev, Felix Smits, and Snighd Sabharwal. Many thanks to Lennart de Bruin, Mark Bogers, Matthijs van der Wild, Tom van der Reep and Cornelia Pabst with whom I studied together during my Masters at the University of Leiden.

Special thanks to Stijn de Reus and Raoul Knobbout for carefully reading my Dutch summary. Finally, I would like to thank my parents and sister. They have always supported me and without them, I would never have been able to finish my PhD research.