Insights from scanning tunneling microscopy experiments into correlated electron systems

Benschop, T.

Curriculum Vitae

Personal details

Name:	Tjerk Benschop
Date of birth:	20 Sept 1995
Nationality:	Dutch
Languages:	Dutch, English

Skills

Experience with STM and spectroscopy at ultra-low temperatures and under ultra-high vacuum conditions, including instrumental development.
Development of high-frequency (MHz) electronics.
Instrumental control and data analysis using Python and Matlab.
Writing and documenting in Microsoft Word, Excel and Powerpoint.

Experience

PhD Student • Leiden Institute of Physics • Dec 2018 - May 2023
Tutor in Physics • O.S.G. de Ring van Putten • Aug 2014 - Aug 2015

Education

PhD • Physics • May 2023 • Leiden University
Supervisor: Dr. M.P. Allan

MSc • Physics • Nov 2018 • Leiden University

BSc • Physics • Aug 2016 • Leiden University

pre-university education • VWO • Aug 2013 • O.S.G. de Ring van Putten

Awards

Casimir PhD grant (2018)

List of publications

1. K. M. Bastiaans, **T. Benschop**, D. Chatzopoulos, D. Cho, Q. Dong, Y. Jin, and M. P. Allan. *Amplifier for scanning tunneling microscopy at MHz frequencies.* Review of Scientific Instruments, 89(9):093709, 2018.
2. K. M. Bastiaans, D. Cho, **T. Benschop**, I. Battisti, Y. Huang, M. S. Golden, Q. Dong, Y. Jin, J. Zaanen, and M. P. Allan. *Charge trapping and super-poissonian noise centres in a cuprate superconductor.* Nature Physics, 14(12):1183–1187, 2018.
3. M. Leeuwenhoek, F. Groenewoud, K. van Oosten, **T. Benschop**, M. P. Allan, and S. Gröblacher. *Fabrication of on-chip probes for double- tip scanning tunneling microscopy.* Microsystems & Nanoengineering, 6(1):99, 2020.
4. S. Lisi*, X. Lu*, **T. Benschop***, T. A. de Jong*, P. Stepanov, J. R. Duran, F. Margot, I. Cucchi, E. Cappelli, A. Hunter, A. Tamai, V. Kandyba, A. Giampietri, A. Barinov, J. Jobst, V. Stalman, M. Leeuwenhoek, K. Watanabe, T. Taniguchi, L. Rademaker, S. J. van der Molen, M. P. Allan, D. K. Efetov, and F. Baumberger. *Observation of flat bands in twisted bilayer graphene.* Nature Physics, 17(2):189–193, 2021.
5. **T. Benschop***, T. A. de Jong*, P. Stepanov, X. Lu, V. Stalman, S. J. van der Molen, D. K. Efetov, and M. P. Allan. *Measuring local moiré lattice heterogeneity of twisted bilayer graphene.* Phys. Rev. Research, 3:013153, Feb 2021.
6. T. A. de Jong, **T. Benschop**, X. Chen, E. E. Krasovskii, M. J. A. de Dood, R. M. Tromp, M. P. Allan, and S. J. van der Molen. *Imaging moiré deformation and dynamics in twisted bilayer graphene.* Nature Communications, 13(1):70, 2022.
7. W. O. Tromp*, **T. Benschop***, J. Ge, I. Battisti, K. M. Bastiaans, D. Chatzopoulos, A. Vervloet, S. Smit, E. van Heumen, M. S. Golden, Y. Huang, T. Kondo, T. Takeuchi, Y. Yin, J. E. Hoffman, M. A. Sulangi, J. Zaanen, and M. P. Allan, *Puddle formation and persistent gaps across the non-mean-field breakdown of superconductivity in overdoped* $(Pb,Bi)_2Sr_2CuO_{6+\delta}$, Nature Materials **22**, 703 (2023)
8. J. Ge, K. M. Bastiaans, D. Chatzopoulos, D. Cho, W. O. Tromp, **T. Benschop**, J. Niu, G. Gu, and M. P. Allan, *Single-electron charge transfer into putative Majorana and trivial modes in individual vortices*, Nature Communications **14**, 3341 (2023)

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