Curriculum Vitae

Personal Data

Title	Prof. Dr.
First name	Nicola
Name	Poccia
Current position	Professor / Group leader
Current institution(s)/site(s), country	University of Naples “Federico II”, Department of Physics (Italy) & Leibniz Institute for Solid State and Materials Research Dresden (IFW-Dresden) &
Identifiers/ORCID	ORCID: 0000-0001-7982-0113 Researcher ID: L-1130-2016

Qualifications and Career

Stages	**Periods and Details**
Degree programme	Laurea in Fisica (M.Sc with distinction in Physics), 2003-2008, Sapienza University of Rome, Italy
Doctorate	2008-2011, Dr. Antonio Bianconi, Topic: Space-time resolved X-ray diffraction experiments on high temperature superconductors, Sapienza University of Rome, Italy
Stages of academic/professional career	2024-present Professor, University of Naples “Federico II”, Department of Physics (Italy). 2019-present Group leader, Leibniz Institute for Solid State and Materials Research Dresden (IFW-Dresden) 2016 – 2019 Postdoctoral fellow in Physics (Dr. P. Kim), Department of Physics, Harvard University, USA 2012 – 2016 Postdoctoral Fellow in Physics (Dr. H. Hilgenkamp), Department of Physics, Universiteit Twente, Netherlands

Supplementary Career Information

N/A

Activities in the Research System

I was recently awarded an ERC Consolidator Grant and appointed Professor of Experimental Condensed Matter Physics at the University of Napoli “Federico II,” where I teach General Physics II and Quantum Science courses. My 50% part-time professorship is complemented by my role as Group Leader at Leibniz IFW Dresden. This joint appointment supports my 2024 plan to establish a second Superpuddles lab to enhance collaboration between IFW and UNINA, leveraging unique measurement capabilities, including Italy’s first quantum computer developed at UNINA. I have delivered over 45 invited talks, including prestigious lectures in Tübingen, Bochum, and at QUANTUMatter2024, as well as talks across universities and research centers

in Rome, Naples, Paris, Belgrade, L'Aquila, and Bangalore.

2025 Invited lecture – SuperFOX, L'Aquila, February 19-21
2025 Invited lecture – TOPNESS25, Erice (Sicily), April 27 – May 1.
2025 Invited lecture - ADVANCES, Belgrad May 19–23,
2025 Invited lecture - Physicalisches Colloquium, Bochum April 14.
2024 Invited lecture – QUANTUMatter 2024, San Sebastian, May 7-10.
2024 Invited lecture – ESPCI Paris, Paris, January 24.
2024 Invited lecture – Fano prize ceremony, Rome, March 20-21.
2024 Invited lecture – ICTS "Engineered 2D quantum materials", Bangalore, July 15-26

I have been regularly reviewing manuscripts for the Physical Review family of journals since 2011, for *Nano Letters* since 2023, and for the *Nature* family of journals since 2013, including recent reviews for *Nature*, *Science, Nature Physics, Nature Nanotechnology*. Additionally, I serve as an advisor to funding agencies such as the ERC and DFG.

2021– present Editorial Board, Nature – Communication Materials.
2021– present Editorial Board, Material Physics Today.

I have been actively organizing meeting and partecipating in committees and scientific societies :

2025 - present Founder of the Superpuddles lab (2) at the UNINA.
2024 - present Member of the "QTlab Unina" https://www.qtlab.unina.it/
2023 – present Member of ERC-Italy – Society of ERC grantee in Italy.
2022 – present Founder and member of the "SIGN – Italian Scientists in Germany Network"
2019 – present Founder and manager of the Superpuddles lab (1) at the IFW-Dresden
2019 – present Contributing as a speaker to the program meeting of the IFW-Dresden.
2019 – present Contributing to the program meeting of the Institute of Metallic Materials

2023 Organizing committee, Superstripes, International conference on quantum in complex matter, Ischia, Italy, June 26-July 1.
2024 Organizing committee, Superstripes, International conference on quantum in complex matter, Ischia, Italy, June 24-29.

Supervision of Researchers in Early Career Phases

PhD students graduated:

Sanaz Shorki – PhD graduate (2020-2024) - Currently postdoctoral researcher at the Max Planck Institute in Dresden, Dresden, Germany.
Mickey Martini – PhD graduate (2019-2023) – Currently to Technical support at Swabian Instruments GmbH, Stuttgart, Germany.
Yejin Lee – PhD graduate (2019-2023) – Currently postdoctoral researcher at the Max Planck Institute in Dresden, Dresden, Germany.

External jury of PhD students:
Dr. Rafael Luque Merino (ICFO and, 2024). Thesis title, "Optoelectronic studies of strongly correlated 2D materials"

Postdoc Supervised:

Christian N. Saggau (2023) moved to postdoctoral researcher at TU-Denmark.

Master and visiting PhD students:
Adeel Bukhar – Master graduate 2021; Luca Tomarchio – visiting PhD student 2022 from University of Rome "La Sapienza"; Giuseppe Serpico 2023-present – visiting PhD student from the University of Naples "Federico II"; Petar Sacher – visiting PhD student 2023 from University of Zagreb. ; Luka Aksamovic – visiting PhD student 2023 from University of Wien. ; Chenxi Liang – visiting PhD student 2023 from Chonqing University;

In addition, I currently supervise:

1. at the IFW-Dresden:

5 PhD students, and I co-supervise 1 PhD student jointly with UNINA, 1 postdoctoral researcher at the TU, 2 postdoctoral researchers at the MPI-CPFS, and I share my laboratory and activities with 1 group leader (from IFW).

2. At UNINA:

1 Master student.

Scientific Results

I have co-authored more than 75 publications. Here below my most recent selected publications:

Category A:

1. T. Confalone, F. L. Sardo, Y. Lee, S. Shokri, G. Serpico, A. Coppo, L. Chirolli, V. M. Vinokur, V. Brosco, U. Vool, D. Montemurro, F. Tafuri, K. Nielsch, G. Haider, **N. Poccia** "Cuprate Twistronics for Quantum Hardware" *Advanced Quantum Technologies, 2500203 (2025).* *https://advanced.onlinelibrary.wiley.com/doi/full/10.1002/qute.202500203*
2. S. Shokri, M. Ceccardi, T. Confalone, C. N. Saggau, Y. Lee, M. Martini, G. Gu, V. M. Vinokur, I. Pallecchi, K. Nielsch, F. Caglieris, **N. Poccia** "Evolution of dissipative regimes in atomically thin $Bi_2Sr_2CaCu_2O_{8+x}$ superconductor." *Advanced Electronic Materials* 11, 2400496 (2025).
3. H. Jin, G. Serpico, Y. Lee, T. Confalone, C. N. Saggau, F. Lo Sardo, G. Gu, B. H. Goodge, E. Lesne, D. Montemurro, K. Nielsch, **N. Poccia** and U. Vool "Exploring van der Waals cuprate superconductors using a hybrid microwave circuit." *Nano Letters* (2025). https://pubs.acs.org/doi/full/10.1021/acs.nanolett.4c05793
4. T. Confalone, S. Shokri, F.L. Sardo, V.M. Vinokur, K. Nielsch, H. Golam, **N. Poccia**. "Challenges in the electrical engineering of cuprate twistronics". *Nature Reviews Electrical Engineering*. 17. 1-2 (2025). https://www.nature.com/articles/s44287-024-00132-8
5. S. Y. Frank Zhao, X. Cui, P. A. Volkov, H. Yoo, S. Lee, J. A. Gardener, A. J. Akey, R. Engelke, Y. Ronen, R. Zhong, G. Gu, S. Plugge, T. Tummuru, M. Kim, M. Franz, J. H. Pixley, **N. Poccia**, P. Kim "Time-reversal symmetry breaking superconductivity between twisted cuprate superconductors." *Science* 382 1422-1427 (2023). https://www.science.org/doi/full/10.1126/science.abl8371
6. M. Martini, Y. Lee, T. Confalone, S. Shokri, C.N. Saggau, D. Wolf, G. Gu, K. Watanabe, T. Taniguchi, D. Montemurro, V. M. Vinokur, K. Nielsch, **N. Poccia** "Twisted cuprate van der Waals heterostructures with controlled Josephson coupling." *Materials Today* 67 106-112 (2023):. https://www.sciencedirect.com/science/article/pii/S1369702123001980
7. Y. Lee, M. Martini, T. Confalone, S. Shokri, C. N. Saggau, D. Wolf, G. Gu, K. Watanabe, T. Taniguchi, D. Montemurro, V. M. Vinokur, K. Nielsch, **N. Poccia** "Encapsulating High-Temperature Superconducting Twisted van der Waals Heterostructures Blocks Detrimental Effects of Disorder." *Advanced Materials 35* 2209135 (2023). https://onlinelibrary.wiley.com/doi/full/10.1002/adma.202209135
8. **N. Poccia**, S. Y. Frank Zhao, H. Yoo, X. Huang, H. Yan, Y. S. Chu, R. Zhong, G. Gu, C. Mazzoli, K. Watanabe, T. Taniguchi, G. Campi, V. M. Vinokur, and P. Kim "Spatially correlated incommensurate lattice modulations in an atomically thin high-temperature $Bi_{2.1}Sr_{1.9}CaCu_{2.0}O_{8+y}$

superconductor." *Physical Review Materials* 4 114007 (2020). https://journals.aps.org/prmaterials/abstract/10.1103/PhysRevMaterials.4.114007

9. V. Brosco, G. Serpico, V. M. Vinokur, **N. Poccia**, U. Vool. "Superconducting qubit based on twisted cuprate van der Waals heterostructures." *Physical Review Letters* 132 017003 (2024). https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.132.017003
10. S. Y. Frank Zhao, **N. Poccia**, M. G. Panetta, C. Yu, Jedediah W. Johnson, H. Yoo, R. Zhong, G. D. Gu, K. Watanabe, T. Taniguchi, S. V. Postolova, V. M. Vinokur, and P. Kim "Sign-reversing Hall effect in atomically thin high-temperature $Bi_{2.1}Sr_{1.9}CaCu_{2.0}O_{8+\delta}$ superconductors." *Physical review letters* 122, 247001 (2019). https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.122.247001

Category B

N. Poccia, F. Tafuri, V. Vinokour "High-temperature superconducting qubit and fabrication method" *US Patent App.* 17/868,477 (2023)
C. Saggau, S. Shokri, M. Martini, Y. Lee, K. Nielsch, V. Vinokur, **N. Poccia** "Contact layer for layered materials." *US Patent App.* No. 18/313,140 (2024).
V. Brosco, V. Vinokour, **N. Poccia**, U. Vool, "Qubit device, method for fabricating the qubit device, and contact layer for the method". U.S. Patent Application 18/749,254 (2025).

Academic Distinctions

I raised over 1.5 million € in 7 separate DFG-like grants (one from Industry). I received the "Consolidator grant" (2 million €) from the European Research Council (ERC-CoG).

2023	European Research Council, acronym: 3DCuT, ERC Consolidator Grant.
2016	Selected as "Emerging Leader," by the Journal of Condensed Matter Physics.
2013	Marie Curie Intra-European Fellowship, Physics, IMAX.