

CV Prof. David B. Haviland

Department of Applied Physics
Section for Quantum and Nano Physics
KTH Royal Institute of Technology
Hannes Alfvénsväg 21
SE-114 21, Stockholm



Birth date: July 22, 1961

Education & Employment:

Prof. of Nanostucture Physics	Royal Inst. of Technology (KTH)	1997-Present
Post Doc, Docent, Lektor	Chalmers University of Technology	1989-1997
Ph.D in Physics	University of Minnesota	1984-1989
Fulbright Scholar	University of Göttingen, Germany	1983-1984
BS in Physics	Union College	1979-1983

Scientific Interests:

Nonlinear oscillations, superconducting quantum circuits, Atomic Force Microscopy (AFM), measurement science and technology. We developed experimental and theoretical methods to probe nonlinear dynamical systems, both classical and quantum, by measurement and analysis of intermodulation (frequency mixing). Applications include the creation of multipartite entanglement in microwave frequency combs, and precise measurement of viscous and elastic surface forces with dynamic AFM. We contribute to the developing field of circuit quantum electrodynamics with pioneering work on single Josephson junctions and large series arrays of SQUIDs. Presently our focus has shifted to nanowire circuits with large kinetic inductance, exploring electromechanical coupling and parametric oscillations with the goal of a quantum-limited force sensor for AFM and quantum sensing with entangled states of light..

Publications:

For a current list of publications and citation statistics see [Google Scholar page](#)

Prizes, Honors, Societies:

Member Swedish Royal Academy of Sciences, class for Physics, 2011-present
Wallmarkska prize 2008 – for contributions to Mesoscopic Physics.
Fulbright Scholar, 1983-9184
Phi Beta Kappa society – dedicated to liberal learning, member since 1983
American Physical Society, Svenska Fysiker Samfundet, European Physical Society

Committees, Coordination and other Commissions of trust:

Several funding committees for various funding agencies
Leadership group, Dept. of Physics / Appl. physics, KTH, 97 – present.
Member Nobel Committee for Physics, 2016 – 2024
Scientific advisor and founding member of Intermodulation Products AB
Founding director of the Albanova Nanofabrication Facility 1997-2018 – Today a major infrastructure used by about 70 researchers at KTH, SU and elsewhere.
Section leader for section of Quantum and Nano Physics, KTH 2022-2023

Scientific advisor to 20 PhD's students.

Scientific advisor to 17 Masters Students.

Scientific advisor to 9 Post Docs.

Currently Teaching:

Quantum Technology SK2903
 Quantum Circuits SK2906
 Coordinator, masters track in Quantum Technology

Courses previously taught:

Thermal, Statistical and Modern Physics, 2nd year Computer Science Students.
 Modern Physics, 2nd year Physics students.
 Microcosmic Physics, 2nd year Computer Science Students.
 Mesoscopic Physics, Masters level course
 Introduction to Electron Beam Lithography, graduate course.
 Advisor for several undergraduates in their 'candidate' degree project.

International collaborative projects, funded projects:

EU project Q-AFM (PI, coordinator 2019-2023)
 EU project SCOPE (PI, coordinator, 08-11)
 EU project SQUBIT and SQUBIT-2 (PI, member, 99-05)
 EU project SETamp (PI, member, 97-00)
 EU project CHARGE (PI, coordinator, 96-00)

Swedish national grants, individual and collaborative, funded projects:

SSF-ITM – Sensing force at the quantum limit (2019-2023)
 WALP – Wallenberg Launchpad (2021)
 WACQT – Wallenberg center for Quantum Technology 2019 – present)
 VR individual: Dynamic response of soft material interfaces (16-19)
 KAW: Quantum states of photons and relativistic physics on a chip (15-19)
 KAW: Dynamic nanotechnology for the study of cells and biosurfaces (12-16)
 Olle Engkvist foundation: Imaging biological forces at the nanometer scale (12-16)
 VR Energy: Recombination and nanostructure in organic solar cells (13-16)
 VR individual: Intermodulation in microresonators..., (PI, 08-11)
 Wennergren Foundation: Sabbatical support, one year, UMASS, Amherst, MA, USA
 VR individual: Quantum Phase Transitions and QED in 1D JJ arrays (PI, 06-08)
 SSF: Center for Nanodevices and Quantum Computing (PI, member, 02-07)
 SSF: framework grant ,Magneto-Electronic Nano-Device Physics (PI, coord., 02-07)
 VR individual: Nano-patterned proteins on a conducting substrate (PI, 01-03)
 VR individual: Investigation Many Body Elect. Trans. w/ Coulomb Int. (PI, 98-04)
 Göran Gustafsson equipment grants: (PI, 1997 and 1999)
 TFR: Coulomb Blockade in Non-Tunnel-Junction Nanstructures (PI, 00-03)
 SSF graduate school in Quantum Devices (97-02)

Reviews and academic evaluations:

Review work for scientific journals, PRL, PRB, APL, JAP, Nature Phys. ...
 Opponent or member of thesis committee, typically 1-3 times per year.
 Review for academic positions, maybe once per year.
 Review of proposals, EU, Finish Academy, Israel Sci. Found. VR, etc.