Samuel Gaucher CV

Contact

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French (C2), English (C2), German (B2)

Education

2016-2020 **Dr. rer. nat., Physics**
Humboldt Universität, Berlin, Germany

2014-2015 **M. Sc., Physics**
McGill University, Montreal, Canada

2010-2013 **B. Sc., major Physics & minor Philosophy**
McGill University, Montreal, Canada

Work Experience

2016-2019 **Doctoral Researcher**, ***Paul-Drude-Institut für Festkörperelektronik***
Making a new, better transistor to solve the scaling challenges of the semiconductor industry.

2014-2015 **Graduate Researcher**, ***McGill University***
Experimental investigation of exotic physics in semiconductor nanoscopic systems.
Teaching Assistant, ***McGill University***
Giving lectures, supervising and grading undergraduate physics students.
Scientific Illustrator, ***Self-employed***
Design and realization of clear, appealing illustrations for scientific publications.

2013 **Undergraduate Researcher**, ***McGill University***
Prototyping and fabrication of nanoscale circuits for quantum information technology.

2010-2012 **Chemist Intern**, ***American Biltrite***
Development of a new formula for ecological flooring materials (two summers).

2006-2020 **Violinist**, ***Self-employed***
Playing classical and jazz music in various events, teaching violin to students of all ages.

Hard Skills

Data Analysis: *6+ years of experience visualizing and understanding data trends for scientific purposes, statistical treatment of experimental data using self-made code.*
Research & Development: *Played a central role in various research projects with focus on industry applications, discovery of innovative approaches in nanofabrication and electronics.*
Programming: *Frequent use of programming languages for data processing, instrument control, and personal projects (Python, R, Mathematica, Matlab, Git, HTML, CSS).*
Written/Oral/Visual Communication: *Co-authored 6+ scientific publications, conveying information to an audience in 15+ scientific conferences and general public events.*
Project Management: *Defining research project goals and building consensus among a team of collaborating scientists, working with limited resources and time frame.*
Teaching: *Violin professor for 4+ years (2006-2010, then occasionally), experimental physics teaching assistant, counseling and grading, private tutor of mathematics (2010).*

Soft Skills

Leadership: *Involved since high-school in student committees occupying elected leading positions (student body president/delegate), PhD student speaker (2017-2019), motivating diverse people towards a common goal.*
Team Work: *Reliable in following through on group tasks with minimal supervision, ability to provide and receive constructive feedback.*
Problem-solving: *Result-driven mentality perfected through 6+ years of research at the forefront of nanoelectronics, ability to solve a complex issue by breaking it down into parts.*
Inventiveness: *Proposed a patent pending (Germany, 2017) device meant to tune the spin polarization of electronic charge currents, found ways to fabricate new nanostructures, synthesized a novel material.*

Workshops, Outreach & Activities

11/2019 Volunteer for the *Berlin Science Week* via the Falling Walls Foundation.
06-07/2019 *Young Entrepreneurs in Science Workshop* offered by the Falling Walls Foundation, a 4-day training aimed at developing entrepreneurial potential (Leipzig).
11/2018 Speaker at the Mind the Lab event during the *Berlin Science Week*.
05/2017 25th Anniversary of the Forschungsverbund Berlin, **slam**: *Have you seen my crystals?*
01/2017 Kerschensteiner Kolleg *Workshop on the Dissemination of Science* (Munich).
2015 NSERC-CREATE Integrated Sensor Systems Graduate Training Program (McGill University, Montreal, Canada).

Publications

2018 Ordered structure of $FeGe_2$ formed during solid-phase epitaxy. B. Jenichen, M. Hanke, **S. Gaucher**, et al. Phys. Rev. Mater. **2** 051402

2018 Ferromagnet/semiconductor/ferromagnet hybrid trilayers grown using solid-phase epitaxy. **S. Gaucher** et al., Semicond. Sci. Technol. **33** 104005

2017 Specific heat and entropy of fractional quantum Hall states in the second Landau level. B. A. Schmidt, K. Bennaceur, **S. Gaucher**, et al., Phys. Rev. B **95** 201306

2017 Growth of $Fe_3Si/Ge/Fe_3Si$ trilayers on GaAs(001) using solid-phase epitaxy. **S. Gaucher** et al., Appl. Phys. Lett. **110** 102103

2017 $Fe_3Si/Ge/Fe_3Si$ thin film stacks on GaAs(001): a solid-phase epitaxy approach. **S. Gaucher** et al., PDI Annual Report 2016, 91

2015 Flip-Chip Fabry-Perot Electron Interferometer, **S. Gaucher**, Master's thesis.

2015 Mechanical Flip-Chip for Ultra-High Electron Mobility Devices. K. Bennaceur, B. A. Schmidt, **S. Gaucher**, et al., Sci. Rep. **5** 13494

Conferences

03/2019 Regensburg (Germany), Annual meeting of the German Physical Society, **poster**: *Structural and electrical properties of layered $FeGe_2$ thin films*.

08/2018 Linz (Austria),10^{th} international School and Conference on Physics and Applications of Spin Phenomena in Solids, **poster**: *Magnetotransport in $FeGe_2$ thin films*.

01/2018 Berlin (Germany), Institute Seminar at the Paul-Drude-Institut für Festkörperelektronik, **talk**: *Ferromagnetic thin film heterostructures grown by solid-phase epitaxy*.

11/2017 Berlin (Germany), Annual meeting of the German Physical Society, **poster**: *$FeGe_2$ thin films grown by solid-phase epitaxy*.

09/2017 Vienna (Austria), Austrian MBE Workshop 2017, **talk**: *Magnetic properties of ferromagnet/semiconductor/ferromagnet hybrid trilayers grown by solid-phase epitaxy*.

09/2017 Bad Honnef (Germany), German Physical Society Summer School on Magnetism, **poster**: *$Fe_3Si/Ge/Fe_3Si$ trilayers on GaAs(001)*.

01/2017 Munich (Germany), Kerschensteiner Kolleg *Workshop on the Dissemination of Science*.

05/2014 Montreal (Canada), Canadian Institute for Advanced Research: *Quantum Materials Summer School*.

Teaching

Fall 2015 PHYS-101: Introductory Physics - Mechanics (Lab TA)

Winter 2015 PHYS-258: Experimental Methods II (Lab TA)

Fall 2014 PHYS-257: Experimental Methods I (Lab TA)

Winter 2014 PHYS-102: Introductory Physics - Electromagnetism (Lab TA)