

Pau Gómez Kabelka

personal information

29 years
Spain | Austria

contact

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languages

Catalan (native)
Spanish (native)
German (native)
English (advanced)

software programming

Python
C/C++
Mathematica
PHP, HTML, CSS3, Javascript

hardware programming

Zynq-7 U+ (VHDL, TCL)
Zynq-7 (VHDL, TCL)
Arty-7 (VHDL, TCL)
Arduino (C/C++)
ChipKit (C/C++)
PXI (Labview)

miscellaneous keywords

hands on projects, carpentry,
scientific outreach, robotics
with LEGO, outdoor sports

résumé

I am a physicist with a passion for digital electronics and hardware programming. I define myself as a very curious and persistent mind, with often more captivating ideas than time for pursuing them. I am currently working in the Quantum Engineering Solutions department of Keysight, developing firmware for the control of quantum computers and quantum simulators. Simultaneously, I am writing my PhD thesis at the Photonic Institute of Barcelona (ICFO), devoted to study the interplay between superfluidity and magnetism in atomic ensembles cooled below a millionth of a degree above absolute zero temperature.

experience

2020–Now	Keysight Technologies <i>Solution engineer</i> Firmware developer in the Quantum Engineering Solutions department. Development of IP for the control of quantum computers and quantum simulators.	Barcelona
2019–2020	Quside Technologies <i>Firmware engineer</i> Development of multi-gigabit quantum random number generators. As part of the Advanced Computing Group, I investigated computational applications that take advantage of high-speed/high-fidelity entropy sources. FPGA hardware platforms: <ul style="list-style-type: none"> • ZC706: Zynq7000 development board. • ZCU111: Zynq Ultrascale+ RFSoc development board. 	Barcelona
2015–Now	The Institute of Photonic Sciences (ICFO) <i>Graduate program</i> PhD student in the Atomic Quantum Optics Group, led by Prof. Morgan Mitchell. Research on spinor BEC co-magnetometers and inter-hyperfine interaction in ^{87}Rb . Hardware projects: <ul style="list-style-type: none"> • 4 port time-of-flight recorder with a temporal resolution of 625ps (FPGA: Artix-7) • Real-time configurable RF source based on a programmable DDS. (AD9958) • Real-time configurable laser locks based on a digital PLL. (ADF41020, ADF4110) 	Barcelona
2014–2015	German Aerospace Center (DLR) <i>Graduate program</i> PhD student in the LIDAR department of DLR Oberpfaffenhofen. Design and development of a new high resolution LIDAR receiver for remote temperature measurements of the troposphere.	München
2012–2013	Max-Planck Institute of Quantum Optics (MPQ) <i>Intern</i>	München
2012	Kirchhoff-Institut für Physik (KIP) <i>Intern</i>	Heidelberg
2011–2012	Institut de Ciències Materials de Barcelona (ICMAB) <i>JAE Intro Fellow</i>	Barcelona
2011	Institut de Ciències Fotòniques (ICFO) <i>Summer Fellow</i>	Barcelona

education

- 2012–2014 **Ludwig-Maximilians-Universität (LMU)** München
M.Sc. in Physics
- Average grade: 1.3
 - Master thesis: “Blue-detuned box potentials for lattice fermions: thermodynamics and realization”.
 - Supervisors: Dr. Ulrich Schneider and Prof. Immanuel Bloch.
- 2008–2012 **Universitat Autònoma** Barcelona
B.Sc. in Physics
- Average grade: 8.8
 - Bachelor thesis: “Phase Engineering of Bose-Einstein Condensates”.
 - Supervisor: Dr. Verònica Ahufinger.

awards

- 2014-2015 **DAAD Award, Program 552.**
- 2012-2014 **La Caixa fellowship.**
- 2012 **Premi Extraordinari de Grau, UAB.**

publications

- [1] P. Gomez, F. Martin, C. Mazzinghi, D. Benedicto Orenes, S. Palacios, and M. W. Mitchell, “Spinor Bose-Einstein condensate comagnetometer,” *Physical Review Letters*, vol. 124, no. 17, p. 170 401, 2020.
- [2] P. Gomez, C. Mazzinghi, F. Martin, S. Coop, S. Palacios, and M. W. Mitchell, “Interferometric measurement of interhyperfine scattering lengths in Rb87,” *Phys. Rev. A*, vol. 100, p. 032 704, 3 2019.
- [3] V. Prakash, L. C. Bianchet, M. T. Cuairan, P. Gomez, N. Bruno, and M. W. Mitchell, “Narrow-band photon pairs with independent frequency tuning for quantum light-matter interactions,” *Optics Express*, vol. 27, no. 26, pp. 38 463–38 478, 2019.
- [4] S. Palacios, S. Coop, P. Gomez, T. Vanderbruggen, Y. N. M. de Escobar, M. Jasperse, and M. W. Mitchell, “Multi-second magnetic coherence in a single domain spinor Bose-Einstein condensate,” *New Journal of Physics*, vol. 20, no. 5, 2018.
- [5] S. Coop, S. Palacios, P. Gomez, Y. N. M. de Escobar, T. Vanderbruggen, and M. W. Mitchell, “Floquet theory for atomic light-shift engineering with near-resonant polychromatic fields,” *Optics Express*, vol. 25, no. 26, 2017.