

Employment

- 2018–Present **Assistant Professor of Physics**, *University of Maryland*, College Park, MD.
2012–2018 **Postdoctoral Scholar**, *UC Santa Barbara*, Santa Barbara, CA.

Education

- 2005–2012 **Ph.D. Applied Physics**, *Stanford University*, Stanford, CA.
Advisor: Vera Lüth
Dissertation: *Evidence for an excess of $\bar{B} \rightarrow D^{(*)}\tau^-\bar{\nu}_\tau$ decays*
- 1999–2004 **B.S. Electro-mechanical engineering**, *Universidad Pontificia de Comillas (ICAI)*, Madrid, Spain, 5-year degree, top academic record of the 2004 class.
Advisors: Ángela Jiménez Casas, Leo Miguel González Gutiérrez
Thesis: *Adaptive solution of differential equations using a wavelet basis: Application to the cooling of electronic components*

Research

- 2018–Present **LHCb experiment**, *CERN LHC*, Geneva, Switzerland.
- 2018–Present: Searches for Lepton Flavor Universality violation [1, 5]
 - 2022–Present: Deputy project leader for the Upstream Tracker
 - 2022–23: Coordinator of the Upstream Tracker installation
 - 2019–22: Co-coordinator of the electronics work package for the Upstream Tracker
 - 2018–22: Development of the readout electronics (PEPI) for the Upstream Tracker
 - 2021–22: Liaison between energy and rare-precision frontiers for SnowMass 2021
 - 2020–21: First observation of $B_s^0 \rightarrow K^-\mu^+\nu_\mu$ decays [2]
- 2012–2018 **CMS experiment**, *CERN LHC*, Geneva, Switzerland.
- Searches for Supersymmetry in final states with missing transverse momentum plus $HH (\rightarrow b\bar{b}b\bar{b})$ [3, 4], one lepton [6, 7], or multiple jets [8, 9]
 - Deputy project leader for the CMS Cathode Strip Chambers (CSCs)
 - Coordinator of the CMS CSC upgrade for the high-luminosity LHC (Phase 2)
 - Main CSC editor of the TDR for the Phase-2 Upgrade of the CMS Muon Detectors [12]
 - Design, production, and firmware development for the CSC Optical DAQ MotherBoards
- 2006–2012 **BABAR experiment**, *SLAC PEP-II*, Menlo Park, CA.
- Measurement of an excess of $\bar{B} \rightarrow D^{(*)}\tau^-\bar{\nu}_\tau$ decays [10, 11]
 - Overhaul of the BABAR hadronic B tagging algorithm
 - BABAR Drift Chamber operations manager and data quality expert

Honors

- 2022 **Junior Faculty Award** from the Board of Visitors of the College of Computer, Mathematics and Natural Sciences in recognition of the *exceptional accomplishments that have raised the profile and prestige of the college*

- 2014 **CMS Achievement Award** for *Outstanding design and construction of the 72 Optical Data MotherBoards that control and read out the Digital CFEB electronics that were installed on ME1/1 chambers during LS1*
- 2005 **National award** in electro-mechanical engineering, 3rd best academic record (Spain)
- 2004 **Extraordinary award** for top academic record at Universidad Pontificia Comillas

Publications

As a member of large experiments such as *BABAR* and *CMS*, I am the author of 941 published articles as of February 17, 2023. The standard practice in these collaborations is to publish articles listing all active members as authors, ordered alphabetically in most cases, to represent the common contributions to the development and running of the machine, as well as to the internal review of all the results. Below are listed only articles where I have played a significant role in the analysis. The full list of my publications is available at <http://inspirehep.net/author/profile/M.Franco.Sevilla.1>

Selected peer-reviewed articles

- [1] F. U. Bernlochner, M. F. Sevilla, D. J. Robinson, and G. Wormser. *Semitauponic b-hadron decays: A lepton flavor universality laboratory*. Rev. Mod. Phys. 94. (2022), 015003. arXiv: 2101.08326 [[hep-ex](#)].
- [2] LHCb Collaboration. *First observation of the decay $B_s^0 \rightarrow K^- \mu^+ \nu_\mu$ and Measurement of $|V_{ub}|/|V_{cb}|$* . Phys. Rev. Lett. 126. (2021), 081804. arXiv: 2012.05143 [[hep-ex](#)].
- [3] CMS Collaboration. *Search for Higgsino pair production in pp collisions at $\sqrt{s} = 13$ TeV in final states with large missing transverse momentum and two Higgs bosons decaying via $H \rightarrow b\bar{b}$* . Phys. Rev. D 97 (2018), 032007. arXiv: 1709.04896 [[hep-ex](#)].
- [4] CMS Collaboration. *Combined search for electroweak production of charginos and neutralinos in proton-proton collisions at $\sqrt{s} = 13$ TeV*. J. High Energy Phys. 03 (2018), 160. arXiv: 1801.03957 [[hep-ex](#)].
- [5] G. Ciezarek et al. *A Challenge to Lepton Universality in B Meson Decays*. Nature 546 (2017), 227–233. arXiv: 1703.01766 [[hep-ex](#)].
- [6] CMS Collaboration. *Search for Supersymmetry in pp Collisions at $\sqrt{s} = 13$ TeV in the Single-Lepton Final State Using the Sum of Masses of Large-Radius Jets*. Phys. Rev. Lett. 119. (2017), 151802. arXiv: 1705.04673 [[hep-ex](#)].
- [7] CMS Collaboration. *Search for supersymmetry in pp collisions at $\sqrt{s} = 13$ TeV in the single-lepton final state using the sum of masses of large-radius jets*. J. High Energy Phys. 08 (2016), 122. arXiv: 1605.04608 [[hep-ex](#)].

- [8] CMS Collaboration. *Search for supersymmetry in multijet events with missing transverse momentum in proton-proton collisions at 13 TeV*. Phys. Rev. D 96. (2017), 032003. arXiv: 1704.07781 [hep-ex].
- [9] CMS Collaboration. *Search for supersymmetry in the multijet and missing transverse momentum final state in pp collisions at 13 TeV*. Phys. Lett. B 758 (2016), 152–180. arXiv: 1602.06581 [hep-ex].
- [10] BABAR Collaboration. *Measurement of an Excess of $\bar{B} \rightarrow D^{(*)}\tau^-\bar{\nu}_\tau$ Decays and Implications for Charged Higgs Bosons*. Phys. Rev. D 88. (2013), 072012. arXiv: 1303.0571 [hep-ex].
- [11] BABAR Collaboration. *Evidence for an excess of $\bar{B} \rightarrow D^{(*)}\tau^-\bar{\nu}_\tau$ decays*. Phys. Rev. Lett. 109 (2012), 101802. arXiv: 1205.5442 [hep-ex].

Technical Design Reports

- [12] CMS Collaboration. *The Phase-2 Upgrade of the CMS Muon Detectors*. CERN-LHCC-2017-012. CMS-TDR-016. Main editor of Chapter 4 on CSCs. Geneva: CERN, Sept. 2017.

Proceedings

- [13] Manuel Franco Sevilla on behalf of the CMS Collaboration. *Searches for supersymmetry in leptonic final states at CMS. Proceedings, 51st Rencontres de Moriond on QCD and High Energy Interactions: La Thuile, Italy, March 19-26, 2016*. ARISF. ARISF, 2016, 51–54.
- [14] Manuel Franco Sevilla on behalf of the BABAR Collaboration. *Measurements of $B \rightarrow D^{(*)}\tau\nu$ and V_{ub} at BaBar. Proceedings, XXIst International Europhysics Conference on High Energy Physics (EPS-HEP2011)*. Proceedings of Science, 2012.

Presentations

- 2022 *Recent results from LHCb*
PPC 2022: Interconnections between Particle Physics and Cosmology, Washington University, St. Louis, MO, June 2022
- 2022 *EF and RPF: Report from the Energy Frontier*
Snowmass Rare and Precision Measurements Frontier Spring Meeting, Cincinnati, OH, May 2022
- 2021 *New physics in B decays? Challenges to Lepton Flavor Universality from LHCb and the B factories*
Physics departmental colloquium, University of Maryland, September 2021
- 2021 *$\mathcal{R}(D^{(*)})$, $\mathcal{R}_{K^{(*)}}$, and their cousins: update on the continued challenges to lepton flavor universality*
Joint Johns Hopkins-University of Maryland seminar, virtual, May 2021
- 2021 *Electroweak penguin anomalies*
APS April Meeting, Minisymposium on Precision Measurements with Leptons, virtual, April 2021

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- 2020 *LHCb Upgrades and Prospects for Charged Lepton Universality Violation*
University of Maryland HEP seminar, virtual, October 2020
- 2020 *New silicon trackers for a triggerless LHCb: the Vertex Locator (VELO) and the Upstream Tracker*
The 29th International Workshop on Vertex Detectors, virtual, October 2020
- 2020 *LFU in charged-current b decays at LHCb*
Snowmass workshop on Lepton flavor violation and lepton universality violation in meson and baryon decays, virtual, September 2020
- 2019 *LHCb upgrades I and II*
Meeting of the APS Division of Particles & Fields (DPF), Boston, MA, July 2019
- 2018 *Searching for Physics Beyond the Standard Model in the LHC Era*
University of Maryland HEP seminar, College Park, MD, March 2018
Southern Methodist University seminar, Dallas, TX, February 2018
Northeastern Department of Physics Colloquium, Boston, MA, February 2018
- 2018 *Lecture series on the CMS CSC electronics and ODMB hardware/firmware*
CERN, Geneva, Switzerland, Spring 2018
- 2018 *CSC upgrade: schedule, R&D, risks, costs, and manpower*
Risk management for the Phase-2 upgrade of the CMS muon detectors
Personnel needs and risk management for the Phase-2 upgrade of the CMS muon detectors
UCG review of the TDR for the Phase-2 Upgrade of the CMS Muon Detectors, January 2018
- 2017 *Design, R&D, and installation of the Phase-2 upgrade of the CMS muon detectors*
Radiation hardness of the electronics for the Phase-2 upgrade of the CMS muon system
CSC upgrade: design optimization, R&D, schedule, and milestones
LHCC review of the TDR for the Phase-2 Upgrade of the CMS Muon Detectors, Fall 2017
- 2017 *Strategies for Searches of BSM Physics in the XXI Century*
LBNL Research progress meeting, Berkeley, CA, February 2017
CU Boulder seminar, Boulder, CO, February 2017
- 2016 *SUSY searches in leptonic final states at CMS*
Rencontres de Moriond, QCD and high energy interactions, La Thuile, Italy, March 2016
- 2012–2013 *Evidence for an excess of $\bar{B} \rightarrow D^{(*)}\tau^-\bar{\nu}_\tau$ decays and implications for 2HDMs*
Cornell LEPP Journal Club seminar, Ithaca, NY, May 2013
Fermilab Joint experimental-theoretical seminar, Batavia, IL, March 2013
University of Illinois at Urbana-Champaign, Champaign, IL, November 2012
Universität Bonn seminar, Bonn, Germany, September 2012
CERN seminar, Geneva, Switzerland, September 2012
UCSB seminar, Santa Barbara, CA, July 2012
SLAC seminar, Menlo Park, CA, July 2012

- 2012 *Semileptonic B decays at BABAR*
HEP2012, Valparaiso, Chile, January 2012
- 2011 *Measurements of $\bar{B} \rightarrow D^{(*)}\tau^-\bar{\nu}_\tau$ and V_{ub} at BABAR*
EPS-HEP2011, Grenoble, France, July 2011
- 2011 *$\bar{B} \rightarrow D^{(*)}\tau^-\bar{\nu}_\tau$ measurement at BABAR*
APS April Meeting, Anaheim, CA, May 2011
- 2009 *Measurement of the $B \rightarrow D^{**}\ell\nu$ and $\bar{B} \rightarrow D^{(*)}\tau^-\bar{\nu}_\tau$ decays*
DPF Meeting, Detroit, MI, May 2009
- 2009 *Gravitation: Introduction to the Einstein equations*
SLAC Association for Student Seminars, Menlo Park, CA, October 2009

Presentations by Trainees

- 2022 *Upstream Tracker: the new silicon microstrip detector for the LHCb Upgrade*,
presented by Svende Braun
ICHEP 2022: International Conference on High Energy Physics, Bologna, Italy,
July 2022
- 2021 *CKM measurements and hadronic form factors*, presented by Svende Braun
Standard Model at the LHC, virtual, April 2021
- 2021 *LHCb Upgrade: Periphery Electronics Processing Interface for the Upstream
Tracker*, presented by Alex Fernez
APS April Meeting, virtual, April 2021
- 2021 *Measurement of the CKM matrix elements $|V_{ub}|/|V_{cb}|$ from semileptonic B_s decays
at LHCb*, presented by Svende Braun
APS April Meeting, virtual, April 2021
- 2021 *Semileptonic B Decays at LHCb*, presented by Svende Braun
BEAUTY 2020 (19th International Conference on B-Physics at Frontier Machines),
virtual, September 2020
- 2019 *Development of the Monitoring System for the Electronics Upgrade Testing at
LHCb*, poster presented by Nitzan Hirshberg
APS Conference for Undergraduate Women in Physics (CUWiP), College of William
and Mary, Williamsburg, VA, January 2019
Award for top-5 poster

Teaching and Mentorship

Teaching

- Spring 2019–21, PHYS 371, *Modern Physics*
- Fall 2019–21, PHYS 375, *Experimental Methods III: Optics*
- Spring 2023

Spring 2023 PHYS 758E, *Seminar in Elementary Particles and Quantum Field Theory*

Student mentorship

2020–Present Alex Fernez

2018–Present Yipeng Sun

2022 Rafael Romero Mendez (undergraduate), Alexa Ávila (high school)

2020 Connor Churko, Derek Colby, Matthew Diaz, Thomas Ersevím, Benjamin Flaggs, Rhea Khatri, Nicholas Magnelli, Claudio Pineda-Bosque, Rohan Rajagopalan, John Spiezio (undergraduates)

2019 Derek Colby, Benjamin Flaggs, Nitzan Hirshberg, Jorge Ramirez Ortíz (undergraduates)

2018 Nitzan Hirshberg (undergraduate)

Service

2015–Present Referee for Physical Review Letters

2021–Present NSF grant reviewer

2023 Co-organizer of the *US contribution to LHCb's Upgrade II Workshop*
University of Maryland, College Park, MD, March 2023

2022 Physics department's merit review committee

2021–2022 Physics department's graduate admissions committees

2019–2021 Qualifying exam grading (Aug 2019), proctoring (Jan 2021) and appeals committee
(May 2019, October 2020)

2019–2021 Candidacy examining committees: Yipeng Sun, Max Trevor

2020 PhD examining committee: Yongbin Feng

2020 Physics department's ad hoc committee on graduate requirements

2018 Co-organizer of the *CMS GEM/CSC Forward Muon Upgrade Workshop*
Texas A&M, College Station, TX, April 2018

Outreach

2022 Mentored students from *Toolkit For Success*, a pre-college research and workshop immersion program for newly admitted underrepresented minority physics majors, and from *PROPEL*, a recruitment initiative for high school and community college students to promote success in Physics, especially aimed at underrepresented groups

2022 Took part in the *Advanced Physics Summer Girls Program* with tours of our laboratories in Maryland as well as a virtual tour of the UT clean room at CERN

- 2020 Recorded physics demonstrations for the department's youtube channel to support remote teaching and learning and was profiled for their website
- 2019–2020 Judge for the *15th Annual USM PROMISE AGEP Research Symposium & Professional Development Conference: The Future of STEM* aimed at graduate students from underrepresented groups in the University System of Maryland, February 2019 and 2020
- 2016 *Particle physics day*, helped hosting at UCSB a class of about 50 students from Santa Barbara Middle School, gave them a virtual tour of CMS, and build a salad-bowl particle accelerator, November 2016
- 2008–2012 *SLAC Association for Student Seminars*, founded and ran with H. Wells Wulsin the first student organization at SLAC. January, 2008
- 2007–2008 *Harvard Club*, helped families of middle school students, some non-English speaking, fill out applications for more-performing schools. East Palo Alto Charter School, East Palo Alto, CA. Fall 2007-2008
- 2007 *Science bus*, science class tutor and science fair judge for middle school students. East Palo Alto Charter School, East Palo Alto, CA. 2007
- 2003 *Volunteer Cara*, monitor at a camp for seriously ill children. Barretstown Gang Camp, County Kildare, Ireland. August, 2003