

Curriculum Vitae - Diego Milanés

Date and place of birth

Nationality

Passport number

Contact number

Contact emails

Current position

Associate staff professor (Jul 2014 - present) Universidad Nacional de Colombia, Bogotá, Colombia

Education

PhD. in Theoretical, Nuclear and Astrophysics (Jan 2005 - May 2010)

- **Institute:** IFIC, Universitat de València. Valencia, Spain.
- **Supervisor:** Fernando Martinez-Vidal, Fernando.Martinez@ific.uv.es
- **Thesis title** [Measurements of the \$D^0\$ - \$\bar{D}^0\$ mixing parameters in the BaBar experiment.](#)

MSc. in Physics (Jan 2004 - May 2005)

- **Institute:** Universidad Nacional de Colombia. Bogotá, Colombia.
- **Supervisor:** Jairo Alexis Rodríguez, jarodriguezl@unal.edu.co
- **Thesis title:** CP-odd lightest Higgs boson production at photon colliders in the framework of the Two Higgs Doublet Model type III

BSc. in Physics (Jan 1999 - Dec 2003)

- **Institute:** Universidad Nacional de Colombia. Bogotá, Colombia.
 - **Supervisor:** Jairo Alexis Rodríguez, jarodriguezl@unal.edu.co
 - **Final year work title:** Helicity formalism and application to the $\gamma\gamma \rightarrow t\bar{t}$ process
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Professional experience

Associate Staff professor (Aug 2021- present) Universidad Nacional de Colombia, Bogotá, Colombia

Assistant Staff professor (Feb 2016 - Aug 2021) Universidad Nacional de Colombia, Bogotá, Colombia

Auxiliary professor (Jul 2014 - Feb 2016) Universidad Nacional de Colombia, Bogotá, Colombia

Postdoctoral researcher (Nov 2012 - July 2014) Laboratoire de physique nucléaire et de hautes énergies (LPNHE), Sorbonne Université. Paris, France.

Postdoctoral researcher (Jun 2010, Nov 2012) Istituto Nazionale di Fisica Nucleare (INFN), Sezione di Bari- Università di Bari. Bari, Italy.

Mentorship and supervision

Ph.D. in physics thesis

- **Ignacio Monroy (2021).** [Charm baryon spectroscopy with \$D^0 p\$ - and \$D^+ p\$ final states at the LHCb experiment.](#)
- **Sergio Jaimes (Cotutelle-present).** *$g-2$ for strange and heavy baryons at LHC.*

MSc in Physics thesis

- **Santiago Gomez (present).** Search for $B_c \rightarrow \eta c \mu \nu$ decay at LHCb experiment
- **David Barón (Codirection present)** . Decays of heavy mesons: a theoretical perspective using effective field theories
- **Juan Sebastian Ordoñez (present)** . Dalitz plot analysis of the doubly Cabibbo-suppressed decay $D^+ \rightarrow K K K$ with the Multi-meson model amplitude

- **Nicolas Gomez (Codirection present).** Model building in a $U(1)$ extension to the SM with flavour and astrophysical phenomenology
- **Sergio Jaimes (2021).** [A model independent study of CP violation in \$D^+ \rightarrow K^- K^+ \pi^+\$ - - - decays](#) (degree of merit).
- **Rafael Nuñez (2021).** [CP sensitivity Dalitz plot analysis of the decay \$B_0 \rightarrow K_0^* K^-\$](#) (degree of merit).
- **Jeisson Riaño (2020).** [Improvement on the Track Reconstruction Algorithms at the LHCb Experiment.](#)
- **Tomás Sierra (2017 - Codirection).** [Configuración de los modos de operación para un sub-detector de fibras centelleantes en el experimento LHCb.](#)

Teaching and administrative activities

Lectures at Universidad Nacional de Colombia for Physics program: Newtonian Mechanics (2019-2021), Electricity and magnetism (2017-2019), Advanced topics on particle physics (2015), Computational tools for physics (2014-2015)

Lectures at Universidad Nacional de Colombia for Engineering program . Physics II: Lectures (2014-2016), Physics II: Laboratory (2014-2019)

Other teaching activities

- **Latin American Alliance for capacity building in advanced physics, LA-CoNGA.** Charged particles identification lectures

Administrative activities

- Advisory committee of BSc Physics program (2016-2018)
- Advisory committee of post graduate Physics programs (2018-2019)
- Coordinator of Physics programs for national certification purposes (2019-2020)

Research projects

Particle physics with LHC detectors in Colombia (2018 - present) - National Colombian funded project, MINCIENCIAS (Associate researcher, main LHCb researcher)

Participation of UNAL in the LHCb experiment (2016 - 2018) - University Internal funded project. Universidad Nacional de Colombia (Associate researcher, main LHCb researcher)

Support to the LHCb-UNAL agreement (2014 - 2017) - University Internal funded project Universidad Nacional de Colombia (Associate researcher, main LHCb researcher)

Study of excited charmed baryon resonances in the LHCb experiment (2014 - 2015) - University Internal funded project, Universidad Nacional de Colombia (Main researcher)

Fellowship and awards

Erasmus+ Mobility Agreement: Université Paris Saclay - Colombia (2023 - 2026) - International Grant , European union (Associate researcher, local Colombian contact)

Erasmus+ Mobility Agreement: Université Paris Saclay - Colombia (2020 - 2022) - International Grant , European union (Associate researcher, local Colombian contact)

Fellow for INFN member associate at CERN (2011)

Organization of scientific events

Colombian Meeting of High Energy Physics: Yearly participation in organizing committee since 2015.

Symposium of Physics in Collision, PIC2018 (2018): Chair of the organizing committee, Bogotá, Colombia

International Conference of High Energy Physics ICHEP2016 (2016): Co-convenor Flavour session. Chicago, USA

LHCb co-convenor charmless B to 3-body decay WG (2015-2017)

BaBar Collaboration meeting (2008): Organizing committee. Valencia, Spain

Publication list - Diego Milanés

Publications in international peer-reviewed scientific journals

As a member of the BaBar and LHCb collaborations, I am an author of over [600 publications](#), here I list 10 where I've made a significant contribution.

- LHCb collaboration, **"Study of $D_s J(*)$ mesons decaying to D^*+K_s0 and D^*0K^+ final states,"** [JHEP 02, 133 \(2016\)](#). Personal contribution: Extraction of data from LHCb framework, crosscheck of fitting templates. Methods used in this paper were first used in LHCb in the paper JHEP 10, 151 (2012).
- LHCb collaboration, **"Study of $D_s J$ decays to $D+K_s0$ and D^0K^+ final states in pp collisions,"** [JHEP 10, 151 \(2012\)](#). Personal contribution: Involved in all aspects of the analysis, development of the full strategy and writing of the paper. First time this strategy was used in the LHCb experiment.
- LHCb collaboration, **"Dalitz plot analysis of the $D^+ \rightarrow K^- K^+ K^+$ decay"**. [JHEP 04 \(2019\) 063](#). Personal contribution: Deep involvement in the interpretation of the results, review of the fitting procedures and of the paper.
- LHCb collaboration **"Study of $D J$ meson decays to $D+\pi^-$, $D^0\pi^+$ and $D^*+\pi^-$ final states in pp collision,"** [JHEP 09, 145 \(2013\)](#). Personal contribution: Extraction of data from LHCb framework, crosscheck of fitting templates and deep involvement in the writing of the paper. Methods used in this paper were first used in LHCb in the paper JHEP 10, 151 (2012).
- BaBar collaboration, **"Measurement of D^0 -anti D^0 mixing parameters using $D^0 \rightarrow K_s0 \pi^+\pi^-$ and $D^0 \rightarrow K_s0 K^+ K^-$ decays,"** [Phys. Rev. Lett. 105, 081803 \(2010\)](#). Personal contribution: Implementation of the Dalitz plot time dependent fit and writing of the paper. I was involved in all steps of the analysis.
- BaBar collaboration, **"Evidence for direct CP violation in the measurement of the Cabibbo-Kobayashi-Maskawa angle gamma with $B \rightarrow D(*)K(*)$ decays,"** [Phys. Rev. Lett. 105, 121801 \(2010\)](#). Personal contribution: Implementation of the Dalitz plot fit involved in the D^0 decay and writing of the paper. I was involved in all steps of the analysis.
- LHCb collaboration, **"Updated branching fraction measurements of $B^0 \rightarrow K_s0 h^+ h^-$ decays,"** [JHEP 11, 027 \(2017\)](#). Personal contribution: Writing of the paper and supervision of MSc students involved in the analysis.
- D.Milanes and N.Quintero, **"Search for lepton-number-violating signals in the charm sector,"** [Phys. Rev. D98, no.9, 096004 \(2018\)](#). Personal contribution: Development of the sensitivity analysis and the writing of the corresponding section in the paper
- J.Mejia-Guisao, D.Milanes, N.Quintero and J.D.Ruiz-Alvarez, **"Lepton number violation in B_s meson decays induced by an on-shell Majorana neutrino"** [Phys. Rev. D97, no.7, 075018 \(2018\)](#). Personal contribution: Development of the sensitivity analysis and the writing of the corresponding section in the paper
- D.Milanes, N.Quintero and C.E.Vera, **"Sensitivity to Majorana neutrinos in $\Delta L=2$ decays of B_c meson at LHCb,"** [Phys. Rev. D93, no.9, 094026 \(2016\)](#). Personal contribution: Development of the sensitivity analysis and the writing of the corresponding section in the paper