Felipe L. Gómez-Cortés

Curriculum Vitae

Profile

I am Physicist. My research area is Computational Astrophysics. I have developed different strong skills in order to solve physical problems; Mathematical Modeling, Data Analysis, Python and C++ programming under UNIX-like operating systems.

I am co-founder of a technology company. As entrepreneur I have learned the Lean Startup methodology, also I have got software developing skills as in back-end as well in front-end. I have worked in a couple projects involving Java (Android), MySQL, PHP, NodeJS and JavaScript (Facebook Messenger Chatbots).

I have teaching at university level as Professor Auxiliar and Graduate Student Assistant, I have taught Computational Methods for physicists, first and second year (theoretical and experimental) physics courses for natural sciences, health sciences and engineering.

Work Experience

2017 **Co-founder and Chief of Technology Officer**, Montanoa Tech S.A., Bogotá, Colombia.
As CTO, I have been Back-end and Front-end Head Developer. I have learned Java for Android mobile apps, some basics of Apache2 running on Ubuntu Server 14.10. We have participated in the Apps.CO/MINTIC official contest "Convocatoria a Equipos de Emprendedores para la Fase de Descubrimiento de Negocios TIC de la Iniciativa APPS.CO" with the project "Pedro App". The purpose of this contest is to give teaching and accompaniment for new entrepreneur teams. We have learned the Lean Startup methodology. Our MVP is a delivery system joint with a Facebook Chatbot to order freshly baked goods on demand.
Ministerio de Tecnologías de la información y las Comunicaciones (MINTIC).

2016-II **Professor Auxiliar**, Universidad Manuela Beltrán, Bogotá, Colombia.
Full time auxiliar professor. I was teaching for health sciences and engineering students experimental physics courses for first and second year.

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(+57) 316 845 5161 • flgomezc87@gmail.com
https://github.com/flgomezc

2015-II **Graduate Teaching Assistant**, Universidad de Los Andes, Bogotá, Colombia.
Assistant Lecturer of **Herramientas Computacionales (Computation Tools)** for Physics and Science. This course requires object-oriented programming knowledge.
Dedication: 8 hours per week.
Website, videos, resources and exercises.
Syllabus:
- UNIX systems basics.
- Introducing the Python programming language.
- Algorithms
- Numerical Methods (derivation, integration, differential equations)
- Solving Physical Systems

2015-II **Graduate Teaching Assistant**, Universidad de Los Andes, Bogotá, Colombia.
Graduate Teaching Assistant of **Métodos Computacionales (Computation Methods)** for Physics and Science using Python and C. In this course Advanced numerical methods are taugth, like Runge-Kutta in coupled differential equations, finite differences and Monte Carlo applications.
Dedication: 4 hours per week.

2013-II 2014-II **Graduate Teaching Assistant**, Universidad de Los Andes, Bogotá, Colombia.
Graduate Teaching Assistant of **Experimental Physics I & II** and **Physics II (Complementary Section)** for Science and Engineering.

2013-I **Academic Teacher**, Batakl´an Corporación de Artes, Bogotá, Colombia.
Teacher of **Art and Science** for elementary and high school.

2013-I **Academic Teacher**, Fundación San José, Bogotá, Colombia.
Teacher of **Mathematics and Statistics** for Business Management and Engineering.

2009–2010 **Astronomy Auxiliar Student**, Universidad Nacional de Colombia, Bogotá, Colombia..
Course "Astronomía Para Todos" (Astronomy for Everybody) at Observatorio Astronómico Nacional.

Computer skills

Please check some projects in my repo at `https://github.com/flgomezc`

- Java (Android) `https://github.com/flgomezc/movies-app`
- Facebook Bot (Node-JavaScript) `https://github.com/flgomezc/pedrobot`
- Python, Ipython Notebook, LaTeX`https://github.com/flgomezc/sfr-dmhm`

Basic	R, PHP, Apache2
Intermediate	C++, Java, MySQL, GIT and Unix-like OS.

Advanced PYTHON with the IPython Notebook (Jupyter), Matplotlib and Numpy modules. LaTeX, JAVASCRIPT and Asynchronous programming with the Facebook API for Messenger Chatbots

Education

2014–2015 **PhD. Physics (Retired)**, *Universidad de Los Andes*, Bogotá, Colombia.
My research field is Computational Astrophysics, dark matter and galaxy formation in early universe. I was internship student at the Purdue University (Indiana, USA) by one semester (2015-I). I attended the Dark Energy Spectroscopic Instrument (DESI) International Collaboration May 2015 Meeting at the FERMILAB (Illinois, USA). Also I have assisted to the workshop nIFTy Cosmology: Numerical Simulations for Large Surveys hosted by Universidad Autónoma de Madrid, (Madrid, España, 2014-summer). I was retired from the PhD. program due to health issues.

2013–2014 **M.Sc. Physics (Postponed)**, *Universidad de Los Andes*, Bogotá, Colombia.
I started here my formation in Computational Astrophysics. After one year I decided to move to the PhD. program, postponing the Master's degree.

2013 **B.Sc. Physics**, *Universidad Nacional de Colombia*, Bogotá, Colombia.
As undergrad student I have explored computational and experimental physics areas. My degree thesis was on experimental physics, measuring ion beam currents in a low energy particle accelerator.

Masters Thesis (In Progress)

Title *A Connection Between Star Formation Rate and Dark Matter Halos at z∼6.*

Adviser Professor Jaime Forero-Romero

Description This work relates ordinary matter and dark matter in the early Universe using telescope observations and halo catalogs from simulations using a Markov-Chain MoteCarlo method.

Keywords Large Scale Structure, Galaxy Evolution, Computational Astrophysics.

Bachelor Thesis

Title Mass Characterization of the H_3^+ and H^- Ion Beam From a Plasmatron Ion Source. 2012

Director Professor Gustavo Martínez Tamayo

Description This work studied how the change of the geometry of the thermionic emission filament in the UNAC-Plasmatron (ion source) generates a change in the ion production and the ion beam.

Keywords Plasma, Ion Beam, H^- Ion, Experimental Physics.

Other

January 2016 **PADI Scuba Diver**, Reef Shepherd Professional Dive Center, Santa Marta, Colombia.

2015-I Internship at **Purdue University, Indiana, USA**. Colciencias scholarship holder.

July 2014 **nIFTy Cosmology: Numerical Simulations for Large Surveys** Universidad Autónoma de Madrid, Madrid, España.
`http://popia.ft.uam.es/nIFTyCosmology/Home.html`

January 2014 **Cosmology on the Beach: Essential Cosmology for the Next Generation.** Berkeley Center for Cosmological Physics and Advanced Institute for Cosmology (México). Cabo San Lucas, México.
`http://bccp.berkeley.edu/beach_program/index2014.html`

June 2013 **Workshop Astronomía en Los Andes**, Uniandes, Bogotá, Colombia

2012 **Circuits and Electronics 6.002x.** Online course of the MIT.
`http://6002x.mitx.mit.edu/info`

October 2010 **Workshop on Physics and Technology at CERN**, UNAL, Bogotá, Colombia

August-2010 **Escuela de Astronomía Extragaláctica** Observatorio Astronómico Nacional, Bogotá , Colombia.

October 2009 **XXIII Congreso Nacional de Física, Universidad del Magdalena**, Santa Marta, Colombia.
`www.sociedadcolombianadefisica.org.co/pag/eventos2009.php`

2008 **Short Tale Workshop"Ciudad de Bogotá 2008."** Fellow of the Capital District in the workshop adjoint to RENATA (Red Nacional de Talleres de Escritura Creativa)

Awards

2011-II Mejor Saber-Pro 2011-2 en Física. ICFES.
Top National Physics Bachelor Student. The list is available at www.icfes.gov.co

Publications

2013 **Experiments with Polygonal and Polyhedral Resistive Structures.** *R. Beltrán, F. Gómez, R Franco, J-Alexis Rodríguez and F. Fajardo,* Latin American Journal of Physics Education Vol 7, Issue 4, Dec 2013, 621-624
`www.lajpe.org/index_dec2013.html`

2010 **Cenizas en el Andén. Antología de Cuento Urbano.** City Short Tales Antology, story tittle: **Imagínate** as Filipo Rviz. ISBN 978-958-44-4585-8.
`https://es.wikipedia.org/wiki/Cenizas_en_el_and%C3%A9n`

Languages

Spanish **Native Speaker**

English **B2 Level** *Common European Framework of Reference. BULATS Test. 2011.*

Interests

- Reading
- Swimming
- Guitar
- Writing
- Diving
- Riding Bike

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