

Curriculum Vitae

✉ jfgh.teorfizikisto@gmail.com

Personal data

- Full name: **Juan Francisco González Hernández.**
- Birth date: **1978, March 21st.**
- Marital Status: **Single.**
- E-mail: jfgh.teorfizikisto@gmail.com / sursolid@gmail.com

Academic Formation

2011 **M. Sc.**, *Master in Theoretical Physics*, Universidad Autónoma de Madrid. Instituto de Física Teórica, IFT-UAM-CSIC.

Master thesis

Title *Some aspects of neutrino phenomenology.*

Supervisor Michele Maltoni.

Description A review of some experimental and theoretical topics in Neutrino Physics. Defended in 2011.

2004 **Graduated in Physical Sciences**, *specialized in Theoretical Physics.* Universidad Autónoma de Madrid (UAM), Spain. Faculty of Sciences.

Conferences and schools

2022 **XXXI Iberian Meeting on Physics Education and Dissemination, July 11-13, 2022**, *Talk: Teaching Physics with Physmatics.*

2017 **School and Workshop, SUSSP73. Gravitational Wave Astronomy. St. Andrews, Scotland. 23rd July-5th August, 2017.**

2016 **IARD, IARD 2016 Meeting, Ljubljana (Slovenia).**
Given talk: **Extended Relativity: Beyond.**

2015 **Workshop, Workshop, Lisbon. Instituto Superior Técnico, 21-22 December 2015.**

2014 **Workshop, Workshop for Science Writers: Quantum Theory 27-29 August 2014. Nordita, Stockholm, Sweden.**

2013 **Multiple Zeta Values, Multiple Polylogarithms and Quantum Field Theory, ICMAT, Campus de Cantoblanco, Madrid (Spain) October 7-11, 2013.**

2013 **Quantum Gravity in Perspective, Munich Center for Mathematical Philosophy, Munchen, Germany.**

2011 **Workshop on High Energy Physics, TAE2011, Universidad del País Vasco, EHU, Bilbao, Spain.**

2006 **International Conference, Fields and Particles. Classical and Quantum, SudarshanFest talks in Honor of G. Sudarshan on his 75th Birthday 18-21 Sep 2006, Jaca (Huesca), Spain.**

2001 **Seminar on Quantum Information, Universidad Internacional Menéndez Pelayo (UIMP), Santander. Spain, July, 2nd-6th.**

Further certificates

2008 **Certificate of Didactical Specialization (TED), UAM, branch: Physics and Chemistry.**

1997 **Certificate of An introductory course on Astronomy and Cosmology.**

Research interests

- Relativistic theories: tests and extensions. Beyond Standard Model Physics.
- Information theory: quantum/classical. Quantum computing, memdevices.
- Non-extensive Thermodynamics and Statistical Physics. Complex systems. Nonlinear physics (chaos, fractals, multifractals...). Fractal calculus.
- Nambu n-ary dynamics. Deformations of algebraic structures and differential calculus, quantum groups. Tropical mathematics. Number theory and applications in physics. Zeta functions and generalizations (polylogarithms, MZV, ...). Clifford algebras and related topics. Theta functions. Graph theory, hypergraph theory, network theory.
- High Energy Physics, Astrophysics and Cosmology: theory and experiment. Neutrino physics (a.k.a. Neutrino physics).
- Vacuum effects (Casimir, Hawking, Unruh, ...) and nonperturbative (strong field) effects in Quantum Physics and QFT (Schwinger, instanton, solitons, ...)
- Quantum Gravity, Physmatics and the search for the fundamental principles. For instance, I am interested in Mach principle, Wilczek total relativity, MaxEnt, least action, generalized uncertainty principles, Zeilinger principle, Specker principle, extensions and modifications of Special Relativity principle and general covariance or the holographic principle.

Teaching and Work Experience

- 2018-current time **Official teacher**, *Passed public examinations and practicum, then Official Professor of Physics and Chemistry (Comunidad de Madrid)*, Current permanent position: IES Humanejos(Parla). Avenida de Juan Carlos I, 19, 28981 Parla, Madrid, Spain. Código de centro: 28030216.
Teléfonos: 916982906-916982993. Fax: 916982860. email del centro: ies.humanejos.parla@educa.madrid.org
- 2008-2018 **Acting public professor after the public examinations in 2008-2010-2012...-2018.**
Branch: Physics and Chemistry, in public Secondary High-School.
- 2007-2008 **Private instructor**, *Center for Studies CELA*, Móstoles, Madrid.
Taught subjects: Physics; Electromagnetism; Mathematics; Chemistry.
- 2004-2005 **Private instructor**, *Center for Studies Santos Niños*, Alcalá de Henares, Madrid.
Taught subjects: Introduction to Biophysics; Electromagnetism; General Physics.
- 2002-2003 **Private instructor**, *Center for Studies Grande*, Móstoles.
Instructor of High-School subjects: Mathematics (Algebra and Calculus), Physics, Chemistry.
- Further experience**
- 1998-... **Private professor-instructor-tutor.**
- 2001-2003 **Chess monitor**, *Primary Schools - Public*, in Móstoles. *Chess teaching* for young people.

Teaching formation courses(in Spanish)

- 2008-2009 **INGLÉS PARA EL BILINGÜISMO EN SECUNDARIA.**
- 2014-2015 **FÍSICA DE PARTÍCULAS Y COSMOLOGÍA: PERSPECTIVA DESDE LA INVESTIGACIÓN TEÓRICA Y EXPERIMENTAL.**
- 2016-2017 **TALLERES PRÁCTICOS DE FÍSICA DE PARTÍCULAS Y COSMOLOGÍA PARA BACHILLERATO.**
- 2018-2019 **LA AGENCIA ESPACIAL EUROPEA: ¿CÓMO USAR UN TELESCOPIO EN EL AULA?.**
- 2018-2019 **TALLERES PRÁCTICOS DE FÍSICA DE PARTÍCULAS Y COSMOLOGÍA.**
- 2018-2019 **FUNCIONARIOS EN PRÁCTICAS DEL CUERPO DE PROFESORES DE ENSEÑANZA SECUNDARIA.**
- 2018-2019 **FÍSICA DE PARTÍCULAS Y COSMOLOGÍA: EN EL CORAZÓN DEL INSTITUTO DE FÍSICA TEÓRICA.**
- 2018-2019 **¿QUÉ SE INVESTIGA ACTUALMENTE EN MATEMÁTICAS?.**
- 2018-2019 **ANÁLISIS DE SERIES TEMPORALES PARA TRABAJO DE INVESTIGACIÓN DE ALUMNOS**, Responsable. Estudiante.

- 2021-2022 **Curso práctico de Relatividad y Física Cuántica. Materiales didácticos para Bachillerato**, RSEF.
- 2020-2021 **EL CURRÍCULO Y LA CUESTIÓN DOCENTE, PILARES DE REFORMA URGENTE ANTE LA NUEVA LEY DE EDUCACIÓN** , Ministerio de Educación.
- 2021-2022 **TUTOR FUNCIONARIO PRÁCTICAS 1 o 2 ALUMNOS** , Consejería de Educación de la CM.
- 2022-2023 **FORMACIÓN PLAN DIGITAL CENTRO. IES HUMANEJOS. PARLA** .
- 2022-2023 **COMPETENCIA DIGITAL DOCENTE A2** .
- 2022-2023 **Curso práctico de Relatividad y Física Cuántica. Materiales didácticos para Bachillerato organizado por la División de Enseñanza y Divulgación de la Física de la RSEF, celebrado entre el 15 de Marzo y el 5 de abril de 2022, con una duración de 20 horas** .
- 2022-2023 **Seminario de Relatividad, Caos y Astronomía organizado por la División de Enseñanza y Divulgación de la Física de la Real Sociedad Española de Física, celebrado entre el 28 de marzo y el 27 de abril de 2023 con una duración de 12 horas.**
- 2022-2023 **CURSO DIRIGIDO AL PROFESORADO** Curso de profesores CESAR: Los límites del Universo(curso en modalidad online, organizado por CESAR, CTIF, CAC, CE-FIRE, IAC, IAA, CONAE, INFoD) .
- 2023-2024 **Curso de LA AGENCIA ESPACIAL EUROPEA: LOS AGUJEROS NEGROS.**
- 2023-2024 **Curso: DESARROLLO DE UN PROYECTO DE RADIO ESCOLAR.**

Taken MOOCs

- 2018 **Introducción a la gravedad cuántica de lazos, or Introduction to Loop Quantum Gravity** , edX 2018 UNCordobaX - CS002x.
- 2017 **Introducción a las ondas gravitacionales (Introduction to Gravitational Waves)**, edX 2017 UNCordobaX - CS001x.
- 2015 **ASTR105x. Alien Worlds: The Science of Exoplanet Discovery & Characterization** , Boston University through edX.
- 2015 **AstroTech: The Science and Technology behind Astronomical Discovery**, Coursera Issued Jan 2015 · Expired Jan 2015 Issued Jan 2015 · Expired Jan 2015 Credential ID YW2H22FT4Z.
- 2015 **Introduction to Physical Chemistry**, Introduction to Physical Chemistry Coursera. Coursera Credential ID MT4KQR68GW
- 2015 **Galaxies and Cosmology (Coursera)**, California Institute of Technology (CALTECH)California Institute of Technology , (CALTECH).
- 2014 **I Curso online de Planetología y Astrobiología** , Colegio Oficial de Geólogos , 100 horas lectivas.
- 2014 **Galaxies and Cosmology (Coursera) 2014 CALTECH University**, Galaxies and Cosmology (Coursera).
- 2014 **From the Big Bang to Dark Energy**, Coursera Credential ID Y5CPKXCLU7.
- 2014 **Introduction to Physical Chemistry (Coursera) 2014**, Introduction to Physical Chemistry (Coursera) 2014 University of Manchester.
- 2014 **AstroTech: The Science and Technology behind Astronomical Discovery (Coursera) 2014**, (Coursera) 2014 University of Edinburgh.
- 2014 **A Look At Nuclear Science and Technology (Coursera)** , (Coursera) 2014 U.of Pittsburgh.
- 2014 **Exploring Quantum Mechanics (Coursera)**, Credential ID YBWW9D4G7C, 2014 Exploring Quantum Mechanics (Coursera), 2014University of Maryland.
- 2014 **Astrobiology and the Search for Extraterrestrial Life**, Coursera Credential ID UXTRQX3VE3.
- 2014 **The Diversity of Exoplanets (Coursera) 2014**, The Diversity of Exoplanets (Coursera) 2014 University of Geneva.
- 2014 **A Look at Nuclear Science and Technology** , Coursera, Coursera Credential ID ALUGSWE3ZS.

- 2013 **A Look At Nuclear Science and Technology** , (Coursera) 2013A Look At Nuclear Science and Technology (Coursera) 2013 U.of Pittsburgh.
- 2013 **A Look At Nuclear Science and Technology** , (Coursera) 2013A Look At Nuclear Science and Technology (Coursera) 2013 U.of Pittsburgh.
- 2013 **Astrobiology and the Search for Extraterrestrial Life** , (Coursera) 2013 The University of Edinburgh.
- 2013 **Exploring Quantum Physics (Coursera) 2013**, Exploring Quantum Physics (Coursera) 2013 University of Maryland, College Park.
- 2013 **From the Big Bang to Dark Energy (Coursera) 2013**, From the Big Bang to Dark Energy (Coursera) 2013 University of Tokyo, course by Hitoshi Murayama.
- 2013 **Understanding Einstein: The Special Theory of Relativity (Coursera) 2013**, Understanding Einstein: The Special Theory of Relativity (Coursera) 2013 Stanford University.
- 2012-2013 **Introduction to Astronomy (Coursera)**, 2012-2013.
Introduction to Astronomy (Coursera) 2012-2013 Duke University

Languages

Spanish	Native.	
English	Advanced. C1. No official certification, approximated level	<i>Fluent, most of the times...</i>
Russian, French	Intermediate. B1.	<i>No official certification, approximated level.</i>

Not fluent, mainly reading/listening skills

Computing and IT

OS	Windows, Mac, Linux, Unix (user)
LaTeX	TeX -type editors(TeXStudio, Texmaker, LyX...)
FORTRAN90	A certificated short course in UAM
Statistics:	SPSS, R, Origin (user)
Other languages	I am interested in Sagemath, Julia, Mathematica/Wolfram, C, C+, C#, Python, R, ROOT,... and others (rudimentary knowledge)
Typewriting	1988-1989 certification

Publications

- *Nonlinear connections on gerbes, Clifford modules and index theorems* (with Sergiu I. Vacaru), ArXiv: <https://arxiv.org/abs/math/0506437>, published in Indian Journal of Mathematics, Vol. 50, No. 3, 2008.
- *Declaración de Libertad Académica (Derechos Científicos del Ser Humano)*. Published in Progress in Physics, vol.2, April 2006, Spanish translation of the original English version, by Dmitri Rabounski.
- *Running Newtonian coupling constants and horizonless solutions in Quantum Einstein Gravity* (with C. Castro and J. A. Nieto), published in Quantization in Astrophysics, Brownian motion and Supersymmetry, MathTiger publishers, Chennai (India), eds. Vic Christianto and F. Smarandache, 2006.
- *Física y Teoría de Números: un romance de muchos polilogaritmos y funciones especiales*, published in La Gaceta de la RSME, Vol. 18 (2015), Núm. 3, Págs. 569–588.
- *Extended Relativity: Beyond*, ArXiv: <https://arxiv.org/abs/2407.11150>, article version of IARD2016 talk, Slovenia.

Unpublished works

- Seesawlogy
- A possible explanation of the OPERA result based on known GPS Physics
- The Schwinger effect: an short introduction

- Noether's amazing theorems
- Los maravillosos teoremas de Emmy Noether
- The cosmic backgrounds of the Universe
- Los fondos cósmicos del Universo
- 2023: curiosidades numéricas
- 2023: number curiosities

Books

The Spectrum Of Riemannium: complete, e-book compiling the 250 posts of my first blog. Available in my blog page.

The Spectrum Of Riemannium: the special posts, e-book compiling the special posts of my first blog. Available in my blog page.

Apuntes de Historia de las Matemáticas y constantes de la Naturaleza, in Spanish, hardcover and softcover editions available at Amazon and in my blog.

101 Actividades de Ampliación de Física y Química, in Spanish, hardcover and softcover, available at Amazon and my blog.

Other Interests

- Science** Thinking, teaching and divulgation of scientific ideas, Astronomy. Physics of propulsion and the interstellar or intergalactic travel. Closed time-like curves. AI and robotics. Scientific computing.
- Internet** e-learning, specialized blogging.
- Reading** Classics, sci-fi, fantasy, Philosophy, Poetry, language learning, esperanto, Physmatics.
- Sports** Jogging, tennis, table tennis, strategical games (e.g.:chess).

Other projects

- Physmatics** Teaching approach ongoing in my personal blog(s) and sites.
- TSOR** **The Spectrum Of Riemannium**. Personal website, <https://www.thespectrumofriemannium.com>
- Fuzzy Physmatics** Semiabandoned project, <https://www.tumblr.com/blog/fuzzyphysmatics>