

Personal Information

Date of Birth **11 July 1993**, *Mexico City, Mexico*.
Nationality **Mexican**.
Marital status **Single**.

Education

2017–2021 **PhD in Astrophysics**, *International Max Planck Research School of Astronomy and Astrophysics at the University of Heidelberg*, Heidelberg, Germany, Magna Cum Laude.
Search and first detection of very-high-energy photons in gamma-ray bursts: an analysis with HAWC and H.E.S.S. Non-thermal Astrophysics Group, Max Planck Institute for Nuclear Physics
2013–2017 **Facultad de Ciencias, Universidad Nacional Autónoma de México - Bachelor in Physics**, Cum Laude.
Grading 9.6 out of 10

Experience

2021–Present **Postdoctoral Researcher**, *Max Planck Institute for Nuclear Physics*, Heidelberg.
2017–2021 **PhD student**, *University of Heidelberg*, Max Planck Institute for Nuclear Physics, Heidelberg.
2015–2017 **CONACYT research assistant**, *Universidad Nacional Autónoma de México*, Instituto de Física, Ciudad de México.
2016 **CERN summer student**, *CMS collaboration*, Heavy ions group, Geneva.

Languages

Spanish **native language**.
English **fluent**, *read/write with high proficiency*.
Italian **fluent**, *read/write with effective operational proficiency*.
German **basic**.
French **basic**.

Memberships

2014–Present **HAWC Collaboration**, *~100 members*, Activities: Instrumentation of PMTs in the detector units. GRB analysis with a self-developed method. Exploration of gamma/hadron separation methods with machine learning. Software development for simulations of electronics and PMT responses..
2017–Present **H.E.S.S. Collaboration**, *~200 members*, Activities: GRB observations and trigger strategies. End-to-end GRB data analysis..
2019–Present **SWG0 Collaboration**, *~80 members*, Activities: Transients studies..

Main publications

2020 **Revealing X-ray and gamma ray temporal and spectral similarities in the GRB 190829A afterglow**, Abdalla, H., **Ruiz-Velasco, E.** et. al., Science 372 (6546), Corresponding author.

- 2018 **A very-high energy component deep in the gamma-ray burst afterglow**, Abdalla, H., Ruiz-Velasco, E. et. al., Nature 575 (7783), 464-467, Main author.
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- 2021 **Gamma-ray burst detection prospects for next generation ground-based VHE facilities**, La Mura, G., Ruiz-Velasco, E. et. al., MNRAS 508.
- 2020 **Multi-messenger astronomy with very-high-energy gamma-ray observations.**, Hinton, J. and Ruiz-Velasco, E., Proceedings of TAUP2019, 2020 Journal of Physics: Conference Series, 1468, 012096..
- 2020 **The H.E.S.S. detection of GRB 180720B and GRB 190829A.**, Ruiz-Velasco E., Proceedings of TMEX 2020.
- 2019 **Measurement of the Crab Nebula spectrum past 100 TeV with HAWC**, Abeysekara, A. U., Ruiz-Velasco E. et. al., The Astrophysical Journal 881 (2), 134, Systematic analysis performed based on a method developed during my PhD. Other subsequent publications by HAWC use these methods to obtain systematics in the fitted spectra.
- 2019 **Gamma-Ray Burst observation at Very High Energy with H.E.S.S.**, Piel, Q., Ruiz-Velasco E., et. al., Proceedings of 36th International Cosmic Ray Conference (PoS-ICRC2019), pp. 761.
- +More than 100 collaboration papers and proceedings (see: <https://orcid.org/0000-0001-6939-7825>)

Presentations and Schools

Invited talks

- February 2022 **Kaffeepalaver, MPIK**, Invited Talk, Heidelberg, Germany.
- October 2021 **Rencontres de Blois, "Recent TeV GRB measurements"**, Invited Plenary Talk, Blois, France.
- October 2021 **Marcell Grossmann Meeting, ""**, Invited Talk in Paralel session, Online Conference.
- June 2020 **TMEX 2020 (Rencontres du Vietnam), "The detection of GRB 180720B with H.E.S.S."**, Invited Plenary Talk, Quy Nhon, Vietnam.
- December 2019 **TEVPA, "The detection of VHE emission in the deep afterglow of GRB 180720B"**, Invited Plenary talk, Sydney, Australia.
- May 2019 **CTA-Symposium, "Discovery of Late-Time Very High Energy Emission from a Gamma-ray Burst Afterglow"**, Invited plenary talk, Bologna, Italy.

Conference talks

- December 2019 **TEVPA, "Highlights from the H.E.S.S GRB observation program"**, Sydney, Australia.

Schools

- August 2018 **ISCRA 2018**, Erice, Italy, Attendance to school.

Mentoring, Lecturing and Outreach

- 2019–Present **Member of the outreach group of H.E.S.S..**
- May 2019 **Press release + Press coverage**, Publication in Science journal of "Revealing X-ray and gamma ray temporal and spectral similarities in the GRB 190829A afterglow"..
- November 2019 **Press release + Press coverage**, Publication in Nature journal of "A very high energy component deep in the gamma-ray burst afterglow"..
- 2018–2019 **MPIK**, Advance laboratory supervisor for bachelor students at University of Heidelberg.
- 2017 **Facultad de Ciencias, UNAM**, Teacher assistant for the Electromagnetism Laboratory.

2015-2017 **IF-UNAM**, *High-school students supervision for summer projects on Machine Learning and cellular automata..*

+Performed the internal review of several HAWC and HESS collaboration papers and proceedings and publications. Served as referee for the MPDI journal.

Computing skills

Programming languages C/C++, python

Data analysis ROOT, numpy, pandas, keras/tensorflow, gammapy, astropy, matplotlib

Workflow Git (hub/lab), CVS, SVN

Others LaTeX