



# Jesús Misráyim Rueda-Becerril

*PhD candidate*

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## Education

- 2011– **PhD in Physics**, *University of Valencia*, Valencia, Spain.  
Supervisors: Prof. Miguel Ángel Aloy Torás & Dr. Petar Mimica  
Tesis: *Radiation Transport in Relativistic Magnetized Fluids — Applications to Relativistic Outflows*
- 2009–2011 **MSc in Physics**, *Institute of Physics and Mathematics, Michoacan University of Saint Nicholas of Hidalgo*, Morelia, Michoacán, Mexico.  
Supervisor: Prof. José Antonio González Cervera  
Tesis: *Study of TOV stars with the SPH method*
- 2004–2009 **Licenciate in Physics**, *Autonomous University of the State of Mexico*, Toluca, State of Mexico, Mexico.  
Supervisor: Prof. Francisco S. Guzmán Murillo  
Tesis: *Numerical solution of null geodesics for the generation of gravitational lenses in spherically symmetric space-times*

## Languages

Spanish Mother tongue  
English Proficient  
Catalan Basic  
French Basic  
German Basic

*TOEFL certified.*

## Computer skills

Proficient Unix (Linux, macOS), FORTRAN (77, 90, 95, 2003), Python, Shell, Mathematica,  $\text{\LaTeX}$ , gnuplot, grace, OpenMP, GeoGebra, Emacs, HDF5, Makefile, Git

Intermediate C, C++, R, Julia, Elisp, MPI, SageMath, yEd, OpenOffice, Microsoft Office, iWork, DOT, TikZ/PGF

Basic HTML, Matlab, Maple, Java, Swift, Perl

## Publications

### Journals

3. J. M. Rueda-Becerril, P. Mimica, and M.-A. Aloy. On the influence of a Hybrid Thermal-Non thermal distribution in the Internal Shocks model for blazars. *ArXiv e-prints*, December 2016.
2. J. M. Rueda-Becerril, P. Mimica, and M. A. Aloy. The influence of the magnetic field on the spectral properties of blazars. *Mon. Not. R. Astron. Soc.*, 438:1856–1869, February

2014.

1. F. S. Guzmán and J. M. Rueda-Becerril. Spherical boson stars as black hole mimickers. *Phys. Rev. D*, 80(8):084023, October 2009.

#### Proceedings

3. J. Rueda-Becerril, P. Mimica, and M. A. Aloy. Numerical simulations of the internal shock model in magnetized relativistic jets of blazars. In *Proceedings of Swift: 10 Years of Discovery (SWIFT 10)*, page 159, Rome, Italy, December 2014.
2. J. M. Rueda-Becerril, P. Mimica, M. A. Aloy, and C. Aloy. Numerical study of broadband spectra caused by internal shocks in magnetized relativistic jets of blazars. In *The Innermost Regions of Relativistic Jets and Their Magnetic Fields*, volume 61 of *European Physical Journal Web of Conferences*, page 02007, June 2013.
1. P. Mimica, M. A. Aloy, J. M. Rueda-Becerril, S. Tabik, and C. Aloy. Numerical simulations of dynamics and emission from relativistic astrophysical jets. In *24th IUPAP Conference on Computational Physics*, volume 454 of *Journal of Physics: Conference Series*, page 012001, August 2013.

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## Grants & Awards

- **Scholarship for studies abroad** for PhD studies granted by the Mexican Council of Science and Technology, 2014–2016.
- **Santiago Grisolia** for PhD studies granted by the Council of Education, Research, Culture and Sport of Valencia, 2011–2014.
- **Scholarship for academic training** for MSc studies granted by the Mexican Council of Science and Technology, 2009–2011.
- **Prize** “Lic. Juan Josafat Pichardo Cruz”, granted by the Universidad Autónoma del Estado de México, for finishing a thesis and graduating within a year after completing the undergraduate credits, 2009.

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## Research experience

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## Meetings and conferences

### Talks

- 2014 **Rueda-Becerril, J.M.**; Mimica, P.; Aloy, M.A., “*Numerical simulations of the internal shock model in magnetized relativistic jets of blazars*”, IVICFA’s Fridays: Computation in Physics, Paterna, Spain, 17 October.
- 2014 **Rueda-Becerril, J.M.**; Mimica, P.; Aloy, M.A., “*Influence of the magnetic field on the spectral properties of blazars in the internal shocks scenario*”, Extreme-Astrophysics in an Ever-Changing Universe: Time-Domain Astronomy in the 21st Century, Ierápetra, Greece, 16–20 June.
- 2013 **Rueda-Becerril, J.M.**; Mimica, P.; Aloy, M.A., “*Numerical study of broadband spectra caused by internal shocks in magnetized relativistic jets*”, XXXIV Biennial meeting of the Royal Spanish Society of Physics, Valencia, Spain, 15–19 July.

### Posters

- 2014 **Rueda-Becerril, J.M.**; Mimica, P.; Aloy, M.A., “*Numerical simulations of the internal shock model in magnetized relativistic jets of blazars*”, Swift: 10 years of Discovery, Rome, Italy, 2–5 December.
- 2013 **Rueda-Becerril, J.M.**; Mimica, P.; Aloy, M.A., “*Numerical study of broadband spectra caused by internal shocks in magnetized relativistic jets of blazars*”, The Innermost Regions of Relativistic Jets and Their Magnetic Fields, Granada, Spain, 10–14 June.
- 2007 **Rueda-Becerril, J.M.**; Leyte González, R.; García Santibañez, F.; Rosendo-Francisco, P., “*Analysis of the superficial structure of graphite samples submitted to an electric arc*”, XL National Physics Meeting, Boca del Río, Mexico, 29 October–2 November.
- 2006 **Rueda-Becerril, J.M.**; Leyte González, R.; García Molina, N.; Rosendo-Francisco, P., “*Modifications on the superficial structure of graphite samples*”, XLIX National Physics Meeting, San Luis Potosí, Mexico, 16–19 October.
- 2005 **Rueda-Becerril, J.M.**; Gómez Díaz, A.; Rosendo-Francisco, P., “*Studies of microwave effects of graphite samples*”, XLVIII National Physics Meeting, Guadalajara, Mexico, 17–21 October.

#### Attendance only

- 2016 CoCoNuT Meeting 2016, Burjassot, Spain, 14–16 December

#### Organization

- Contribution to the organization of the X Scientific Meeting of the Spanish Astronomical Society, Valencia, Spain, 14–16 December, 2012

### Professional development

- 7–16 Feb 2017 **Data Analysis and Machine Learning with Python**, *Universitat de València*, Burjassot, Spain.  
No. of hours: 8
- 23–16 May 2014 **The Universe in the light of PLANCK and BICEP2**, *Universitat de València*, Burjassot, Spain.  
No. of credits: 2
- 23–27 Sep 2013 **Dark Matter**, *Universitat de València*, Burjassot, Spain.  
No. of credits: 2
- 23 Apr–8 May 2013 **International Cargèse School on Cosmic Accelerators**, *Institut d’Études Scientifiques de Cargèse*, Cargèse, France.
- 9–12 Apr 2012 **Introduction to C++ Programming**, *Universitat de València*, Burjassot, Spain.  
No. of credits: 6
- 27 Mar–4 Apr 2012 **Numerical Relativistic Astrophysics**, *Universitat de València*, Burjassot, Spain.  
No. of hours: 9
- 5–9 March 2012 **Fortran for Scientific Computing**, *High Performance Computing Center Stuttgart*, Stuttgart, Germany.  
No. of hours: 33
- 25 Jun–24 Aug 2007 **XII Summer of Research an Science Program**, *Academia Mexicana de la Ciencia*, Morelia, Mexico, under supervision of Prof. Francisco S. Guzmán Murillo.  
National program for temporary stays at national research centers for undergraduate science student.
- Jun 2006 **Advanced Summer School**, *CINVESTAV*, Ciudad de México, Mexico.

Aug 2006 **Advanced Summer School**, *Instituto de Física de la Universidad de Guanajuato*, León, Mexico.

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## Other activities

Aug 2007–May 2009 Physics students representative at the Governing Council of the Faculty of Sciences of the Universidad Autónoma del Estado de México

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## References

- Prof. Miguel Ángel Aloy Torás · +34 96 354 3080 · Miguel.A.Aloy@uv.es · UV
- Dr. Petar Mimica · +34 96 354 3080 · Petar.Mimica@uv.es · UV
- Prof. Francisco Siddhartha Guzmán Murillo · +52 443 322 3500 ext 1264 · guzman@ifm.umich.mx · IFM, UMSNH
- Prof. José Antonio González Cervera · +52 443 322 3500 ext 1263 · gonzalez@ifm.umich.mx · IFM, UMSNH