

Marco A. Muñoz-Gutiérrez

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Professional Experience

- Current: Postdoctoral Fellow at ASIAA** **Taiwan**
Supervisors: Dr. Shiang-Yu Wang & Dr. Matt Lehner Nov. 2017 - present
Project: TAOS II
- Visiting at Instituto de Astronomía, UNAM** **México**
Host: Dr. Bárbara Pichardo May - October, 2017
- Postdoctoral Fellow at São Paulo State University (UNESP)** **Brazil**
Supervisor: Dr. Silvia Maria Giuliatti Winter April 2016 - April 2017
Project: Narrow Planetary Rings and Small Satellites Dynamics

Education

- Instituto de Astronomía, Universidad Nacional Autónoma de México** **México**
PhD in Astrophysics (Summa Cum Laude) Jan. 2016
Thesis title: *Dinámica orbital caótica en el cinturón de Kuiper (english: Orbital Chaotic Dynamics in the Kuiper Belt).*
- Supervisors:** Bárbara Pichardo & Mauricio Reyes-Ruiz
- Instituto de Astronomía, Universidad Nacional Autónoma de México** **México**
M. Sc. (Astronomy), GPA – 9.5/10 Feb. 2012
Paris Pismis prize (2012)
- Facultad de Ciencias, Universidad Nacional Autónoma de México** **México**
B. Sc. in Physics, GPA – 8.8/10 June 2010
Best B. Sc. thesis in Astronomy (2010)

Distinctions

- Member at level 1 of the Mexican National Researchers System (*Sistema Nacional de Investigadores, SNI-I*, 2020 - 2022).
- **Alfonso Caso Medal** to University Merit — *Awarded by Universidad Nacional Autónoma de México for the Ph.D. program in Astrophysics completed in 2016* —.

Refereed Publications

1. **M. A. Muñoz-Gutiérrez**, A. Peimbert, B. Pichardo, M. Lehner & S.-Y. Wang 2019, *The Contribution of Dwarf Planets to the Origin of Jupiter Family Comets*, *AJ*, 158, 184
2. **M. A. Muñoz-Gutiérrez**, A. Peimbert & B. Pichardo 2018, *The Contribution of Dwarf Planets to the Origin of Low-inclination Comets by the Replenishment of Mean Motion Resonances in Debris Disks*, *AJ*, 156, 108
3. **M. A. Muñoz-Gutiérrez** & S. Giuliatti Winter 2017, *Long-term evolution and stability of Satur-*

nian small satellites: Aegaeon, Methone, Anthe and Pallene, MNRAS, 470, 3750

4. **M. A. Muñoz-Gutiérrez**, B. Pichardo & A. Peimbert 2017, *Giant Planets Can Act as Stabilizing Agents on Debris Disks*, AJ, 154, 17
5. **M. A. Muñoz-Gutiérrez**, B. Pichardo, M. Reyes-Ruiz & A. Peimbert 2015, *Dynamical Heating Induced by Dwarf Planets on Cold Kuiper Belt-like Debris Disks*, ApJL, 811, L21
6. **M. A. Muñoz-Gutiérrez**, M. Reyes-Ruiz & B. Pichardo 2015, *Chaotic Dynamics of Comet 1P/Halley: Lyapunov Exponent and Survival Time Expectancy*, MNRAS, 447, 3775
7. A.E. Cordero-Borboa, I. Camarillo-García & **M. A. Muñoz-Gutiérrez** 2008, *X-ray diffraction characterization of a spatially coherent crystalline nanocomposite obtained from a melt of KCl, KBr and KI salts*, Journal Physica B: Condensed Matter, 404, 199

Conference Series

1. **M. A. Muñoz-Gutiérrez** & V. Avila-Reese 2011, *The Cosmic Star Formation History*, Revista Mexicana de Astronomía y Astrofísica Conference Series, 40, 23

Conference Contributed Talks

- “The Long-term Dynamical Evolution of the 34 Largest Trans-Neptunian Objects in the Solar System”, Astrophysical Dynamics, July 7-9 2019 in Shanghai, China.
- “The Contribution of Dwarf Planets to the Origin of Low Inclination Comets by the Replenishment of Mean Motion Resonances in Debris Disks”, 50 DPS Meeting, October 21-26 2018 in Knoxville, Tennessee, USA.
- “Long-term Evolution of Aegaeon, Methone, Anthe and Pallene”, 48 DPS Meeting, October 16-21 2016 in Pasadena, California, USA.
- “Dynamical Heating Induced by Dwarf Planets on Cold Kuiper Belt-Like Debris Disks”, 47 DPS Meeting, November 8-13 2015 in Washington, DC, USA.
- “The Effect of Dwarf Planets on the Dynamics of the Kuiper Belt”, 46 DPS Meeting, November 9-14 2014 in Tucson, Arizona, USA.
- “Chaotic Dynamics of Halley’s Comet: Lyapunov Exponent and Survival Time Expectancies”, Astronomía Dinámica en Latinoamérica, ADeLA 2014, Sep. 29 - Oct. 3 2014 in Santiago de Chile, Chile.
- “Chaotic Dynamics of Halley’s Comet: Lyapunov Exponent and Survival Time Expectancies”, Asteroids, Comets, Meteors 2014, Jun. 30 - Jul. 4 2014 in Helsinki, Finland.
- “Dinámica orbital ordenada y caótica en el Sistema Solar” (english: “Ordered and Chaotic Orbital Dynamics in the Solar System”), Congreso Nacional de Astronomía, Oct. 28 - Nov. 1 2013 in México D.F., México.
- “La órbita del cometa 1P/Halley como posible restricción a la masa del cinturón de Kuiper” (english: “1P/Halley’s Comet Orbit as a Possible Restriction of the Kuiper Belt Mass”), Taller Nacional de Astrofísica Planetaria, March 4-8 2013 in Monterrey, Nuevo León, México.
- “Dissecting the Cosmic Star Formation History”, Reunión Regional Latinoamericana de la Unión Astronómica Internacional, LARIM 2010, November 8-12 2010 in Morelia, Michoacán, México.

Conference Poster Presentations

- “The Contribution of Dwarf Planets to the Origin of Jupiter Family Comets”, New Horizons in Planetary Systems, May 13-17 2019 in Victoria, British Columbia, Canada.
- “The Dynamics of Pallene, a Small Saturnian Satellite, and Its Diffuse Dusty Ring”, Asteroids,

Comets, Meteors 2017, April 10-14 2017 in Montevideo, Uruguay.

- “Long-term Evolution of Pallene and Its Diffuse Ring with Solar Radiation Pressure”, XVIII Colóquio Brasileiro de Dinâmica Orbital, Nov. 28 - Dec. 2 2016 in Águas de Lindóia, São Paulo, Brazil.
- “Dissection by Mass of the Star Formation History in the Universe”, Essential Cosmology for the Next Generation: Cosmology on the Beach, January 10-14 2011 in Puerto Vallarta, Jalisco, México.

Supervisory Roles

- **Miguel Briones Rivera** - Physics Engineering, Thesis Advisor. *Estudio dinámico de objetos cercanos a la Tierra: su posible evolución y peligrosidad (english: Near Earth Objects Dynamical Studies: Possible Evolution and Hazard)*. Universidad Iberoamericana, México, 2016.
- **Gustavo Madeira** - B. Sc. in Physics, Jury Member. *Dinâmica de partículas micrométricas no arco de anel G de Saturno (english: Dynamics of Micrometric Particles in Saturn's G Ring Arc)*. UNESP, Brazil, 2016.
- **Andrew Roberts** - Summer student at ASIAA. *Project: Origin and Evolution of Comets on Unusual Orbits in the Solar System*. Taipei, Taiwan, July-August 2019

Teaching Experience

- 2016 Series of Seminars on Frequency Analysis at UNESP.
- Teacher assistant at UNAM for B. Sc. in Physics courses:
 - 2015 “Cosmic Structure Formation and Evolution”.
 - 2014 “Cosmological Astrophysics”.
 - 2013 “Cosmology and Extragalactic Astrophysics”.
 - 2013 “Dynamical Structure and Evolution of the Galaxy”.

Programming skills

- IDL, Fortran, Python, C
- Numerical N-body simulations (MERCURY, REBOUND)

Languages

Spanish: Native speaker

English: Advanced

Conversationally fluent

Portuguese: Medium

Chinese: Basic