

# Asier López-Gordón

PREDOCTORAL RESEARCHER

Instituto de Ciencias Matemáticas (CSIC-UAM-UC3M-UCM)  
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## Education

### Universidad Autónoma de Madrid

Madrid, Spain

#### PHD MATHEMATICS

2021 -

- PhD thesis: The geometry of dissipation
- Advisor: Manuel de León

### Universidad Autónoma de Madrid

Madrid, Spain

#### MSc THEORETICAL PHYSICS

2020 - 2021

- MSc thesis: The geometry of Rayleigh dissipation (arXiv:[2107.03780](https://arxiv.org/abs/2107.03780))
- Advisor: Manuel de León

### Universidad Complutense de Madrid

Madrid, Spain

#### BSc PHYSICS

2016 - 2020

- BSc thesis: Integrability, chaos and entanglement in quantum systems
- Advisors: Federico Finkel and Artemio González-López

## Professional Experience

2021- **Predoctoral researcher**, Instituto de Ciencias Matemáticas (ICMAT-CSIC), Madrid, Spain

2020-2021 **“JAE Intro” research grantee**, Instituto de Ciencias Matemáticas (ICMAT-CSIC), Madrid, Spain

## Publications

### PUBLISHED

M. de León, M. Lainz, A. L.-G., “Discrete Hamilton-Jacobi theory for systems with external forces”, *J. Phys. A: Math. Theor.* (2022), doi: [10.1088/1751-8121/ac6240](https://doi.org/10.1088/1751-8121/ac6240),

M. de León, M. Lainz, A. L.-G., “Geometric Hamilton-Jacobi theory for systems with external forces”, *J. Math. Phys.* **63**, 022901 (2022), doi:[10.1063/5.0073214](https://doi.org/10.1063/5.0073214)

M. de León, M. Lainz, A. L.-G., “Symmetries, constants of the motion, and reduction of mechanical systems with external forces”, *J. Math. Phys.* **62**, 042901 (2021), doi:[10.1063/5.0045073](https://doi.org/10.1063/5.0045073)

### IN REVIEW

M. E. E. Irazú, A. L.-G., L. J. Colombo, and M. de León, “Hybrid Routhian reduction for simple hybrid forced Lagrangian systems” (2022), [arXiv:2202.08588](https://arxiv.org/abs/2202.08588) [math.DS]

L. J. Colombo, M. de León, M. E. Eyrea Irazú, A. L.-G., “Symplectic and Cosymplectic Reduction for simple hybrid forced mechanical systems with symmetries” (2021), [arXiv:2112.02573](https://arxiv.org/abs/2112.02573) [eess.SY]

## Awards, Fellowships, & Grants

2021 **“FPI” predoctoral contract**, Ministerio de Ciencia e Innovación

**“JAE Intro” Grant extension**, Instituto de Ciencias Matemáticas (ICMAT)

3 000 €

2020 **“JAE Intro” Grant**, Consejo Superior de Investigaciones Científicas (CSIC)

3 000 €

2019 **“Beca de Colaboración en Departamentos”**, Universidad Complutense de Madrid

2 000 €

## Contributed Talks and Posters

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- April 1, 2022. **Geometry, Mechanics and Control Seminar.** *Reduction, Hamilton-Jacobi theory and discretization of mechanical systems with external forces.* Instituto de Ciencias Matemáticas, Madrid, Spain (online).
- March, 2022. **VII Iberoamerican Meeting on Geometry, Mechanics and Control.** *Forced Hamiltonian and Lagrangian systems. Symmetries, reduction and Hamilton-Jacobi theory.* Departamento de Matemática, Universidad Nacional del Sur, Bahía Blanca, Argentina (online).
- January, 2022. **Congreso Bienal de la Real Sociedad Matemática Española** (Biennial Congress of the Royal Spanish Mathematical Society). *Systems with external forces. Symmetries, reduction and Hamilton-Jacobi theory.* Universidad de Castilla – La Mancha, Ciudad Real, Spain (poster).
- December 1-3, 2021. **Young Researchers Workshop in Geometry, Mechanics and Control.** *Symmetries, reduction, Hamilton-Jacobi theory and discretization for systems with external forces.* Centre de Recerca Matemàtica, Campus de Bellaterra, Barcelona, Spain (poster).
- September 8, 2021. **XXIX International Fall Workshop in Geometry and Physics.** *Mechanical systems with external forces. Symmetries, reduction and Hamilton-Jacobi theory.* Centro de Matemática e Aplicações, Universidade da Beira Interior, Covilhã, Portugal (online).

## Assistance to events

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### WORKSHOPS

- January, 2022. **Congreso Bienal de la Real Sociedad Matemática Española** (Biennial Congress of the Royal Spanish Mathematical Society). Universidad de Castilla – La Mancha, Ciudad Real, Spain.
- December 1-3, 2021. **Young Researchers Workshop in Geometry, Mechanics and Control.** Centre de Recerca Matemàtica, Campus de Bellaterra, Barcelona, Spain.
- September 7-10, 2021. **XXIX International Fall Workshop in Geometry and Physics.** Centro de Matemática e Aplicações, Universidade da Beira Interior, Covilhã, Portugal (online).
- July 26-30, 2021. **Symposium on New Developments in Momentum Polytope Theory.** Instituto de Ciencias Matemáticas (ICMAT), Madrid, Spain (online).
- February 18-19 2021. **XXII Winter Meeting on Geometry, Mechanics and Control.** Universidade de Santiago de Compostela, Santiago de Compostela, Spain (online).
- December 1-3, 2020. **BYMAT Conference-Bringing Young Mathematicians Together.** Universitat de València and Universitat Politècnica de València, Valencia, Spain (online).

### SCHOOLS

- August 2-5, 2021. **Summer School on New Developments in Momentum Polytope Theory.** Instituto de Ciencias Matemáticas (ICMAT), Madrid, Spain (online).
- June 21-July 9, 2021. **JAЕ School of Mathematics.** Instituto de Ciencias Matemáticas (ICMAT), Madrid, Spain.
- January 25-February 5, 2021. **Master School on Geometry, Analysis and Applications.** Universidad de Cantabria, Santander, Spain (online).
- September 7-9, 2020. **JAЕ School of Mathematics.** Instituto de Ciencias Matemáticas (ICMAT), Madrid, Spain (online).
- July 1-5 2019. **I International School on Particle Physics and Cosmology.** Universidad Internacional Menéndez Pelayo, Santander, Spain.

### SEMINARS

- Weekly. **Geometric Mechanics and Control Seminar.** Instituto de Ciencias Matemáticas (ICMAT), Madrid, Spain (online).
- Biweekly. **Geometry, Dynamics and Mechanics Seminar.** Università degli Studi di Padova, Padua, Italy (online).

## Languages

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**English.** Advanced, C1 in the CEFR, 7.5 band score in IELTS Academic

**Spanish.** Mother tongue

## Computer skills

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**Advanced.**  $\text{\LaTeX}$ , GNU/Linux, Mathematica, Python

**Basic.** bash/shell, gnuplot, html, Julia, matlab, OriginLab, SciDAVis