

CV

JOSE MARÍA EZQUIAGA

Contact Information	Niels Bohr Institute (NBI), University of Copenhagen	jose.ezquiaga@nbi.ku.dk ezquiaga.github.io
Research Interests	gravitational waves, dark energy, gravity, black holes, lensing, inflation	

Research Positions

Assistant Professor Niels Bohr Institute (NBI), University of Copenhagen	2022-present
NASA Einstein Fellow , postdoctoral researcher Kavli Institute for Cosmological Physics (KICP), The University of Chicago	2019-22

Education

PhD Universidad Autónoma de Madrid (UAM) , Theoretical Physics <i>Probing the Dark Universe with Gravitational Waves</i> , Thesis Advisor: Juan García-Bellido (IFT/UAM) Research visits: CERN (3 months, 2018), U. C. Berkeley (3 months, 2017)	2015-2019
MA Instituto de Física Teórica (IFT) , Theoretical Physics <i>Higgs-Dilaton Cosmology: Phenomenology, Self-Consistency and Predictions</i> MA Thesis Advisor: Juan García-Bellido (IFT/UAM)	2014-15
BA Universidad Autónoma de Madrid , Physics <i>Advanced Methods for Statistical Analysis of the CMB</i> BA Thesis Advisor: Pavel Naselsky (Niels Bohr Institute) Research visits: Niels Bohr Institute (10 months, 2013-14)	2010-14

Grants

VILLUM Young Investigator Grant , DKK 8 Million (\simeq \$1.2 Million) Niels Bohr Institute, University of Copenhagen	2023-28
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Honors and Awards

Fellowships	
Marie Skłodowska-Curie INTERACTIONS Senior Fellow	2022-24
NASA Einstein Fellow	2019-22
KICP Fellow	2019-22
FPU Fellow from Spanish Ministry of Science	2015-19
Postgraduate Fellow from Excellence Campus UAM-CSIC	2014-15
Career prizes	
Best thesis in theoretical physics from Spanish Royal Society of Physics	2021
Enrique Fuentes Quintana Prize best thesis in STEM	2021
Extraordinary Doctorate Prize from UAM	2020
Sobresaliente Cum Laude doctorate	2019
Sparrho Early Career Research Prize	2018

Scholarships and travel grants

Research Visits Grant at CERN by Spanish Ministry of Science	2018
Conference Grant from Rencontres de Moriond	2018
Conference Grant from TEXAS symposium	2017
Italian Physics Society scholarship for Enrico Fermi School	2017
Research Visits Grant at Berkeley by UAM	2017
Full-scholarship for Summer Courses at UIMP	2014, 2015
Erasmus Scholarship at the Niels Bohr Institute	2013-14
Scholarship for Summer Course at UAM	2012

Professional membership

Scientific Collaborations

Laser Interferometer Gravitational-Wave Observatory (LIGO)	2019-present
Laser Interferometer Space Antenna (LISA)	2018-present
Cosmic Explorer Consortium (CE)	2019-present

Networks

EuCAPT Consortium, GWverse COST Actions, CANTATA COST Actions

Associations

American Physical Society, Spanish Royal Society of Physics

Metrics

Publications

34 publications, 2557 citations (82.5 per paper), h -index 21

See full publication list below. More info at [InSpire](#), [arXiv](#) and [ADS](#)

Presentations

34 invited seminars, 41 contributed talks at conferences (12 of which invited) and 5 posters

Presentation slides and videos from selected talks can be found at ezquiaga.github.io/talks

See full presentation list below

Leadership

LIGO:

Co-chair Lensing group	2022-present
Editorial Team member LIGO/Virgo GW lensing search	2020-present
Coordinator Test Λ CDM focus group	2021-23

LISA:

Coordinator Standard Siren chapter of Cosmology White Paper	2020-21
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NBI:

Organizer NBIA Gravity Seminars	2022-present
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UChicago:

Organizer KICP seminars	2020-21
Coordinator Community-Engagement Working Group	2020-22
Organizer 1st KICP-A&A Outreach Symposium	2020
Organizer KICP Postdoc Jamboree	2020, 2022
Organizer Funch Journal Club	2019-20

Teaching and Mentoring

Main instructor

Exploring our universe, summer course, STEM-OUT Mexico/UChicago (virtual)	2021
GWs and Cosmology, PhD school, IPARCOS (Madrid, Spain)	2019

Invited lectures

Nordic Winter School in Gravitational Astrophysics, PhD school, Norway	2023
Multi-messenger Astronomy, undergrad course, UChicago (virtual)	2021

Teaching assistant

Classical Electrodynamics, 3rd and 4th yr Physics Degree, UAM	2018-19
Physics Lab., 1st year Biology Degree, UAM	2017-18
Physics of the Cosmos, 4th year Physics Degree, UAM	Spring 2017
Physics Lab., 1st year Biology Degree, UAM	Jan. 2017

Pedagogy, teaching and mentoring courses

Using methods from innovation and entrepreneurship	Jan. 2023
Mentoring Training, Science Better Consulting (virtual),	Fall 2022
Active Learning, UAM	Fall 2018
Introduction to Flipped Classroom, UAM	Feb. 2018

Graduate student mentoring

Chun-Lung (Juno) Chan, NBI, <u>PhD supervisor</u>	2022-present
Mesut Çalışkan, John Hopkins University, 2 ongoing projects	2021-present
Víctor Bosca, UAM, 1 ongoing	2021-present
Fei Xu, UChicago, 2 published articles	2020-22
Meng-Xiang Lin, UChicago, 2 published articles	2020-22
Paolo Cremonese, University of Szczecin, 1 published article	2020-21

Master student mentoring

Patsrikasem (Kam) Vanitchareenthum, NBI, <u>MSc Thesis supervisor</u>	2022-present
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Undergraduate student mentoring

Mesut Çalışkan, UChicago, 1 finished project	2020-21
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Career panels

LISA Early Career Scientists (LECS) Career Fair	Nov. 2020
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Service

Grant reviewer

NASA FINNEST (grants for graduate student research)	2021
NASA FINNEST (grants for graduate student research)	2020
Research Grant Council of Hong Kong (grants for academic research)	2020

Referee

Physical Review Letters, Physical Review D, Journal of Cosmology and Astroparticle Physics, Physical Letters B and International Journal of Modern Physics D

Organized seminars and journal clubs

NBIA Gravity Seminars (every two week)	2022-present
KICP Seminars (every week)	2020-2021
Thunch Journal Club at KICP (every week)	2019-2020
CosmoGrav Journal Club at IFT (main organizer, every 2 weeks)	2016-2019

Organized conferences & Schools

NBIA Workshop (Organizer, NBI, website)	Aug. 2023
LISA Fundamental Physics WG Meeting (Organizer, NBI, website)	Aug. 2023
Nordic Winter School (Organizer, Norway, website)	Feb. 2023
The quest for precision GW cosmology (Main organizer, KICP, website)	Sept. 2022
NASA Hubble Symposium 2020 (SOC, virtual)	Sept. 2020
6th LISA Cosmology WG (local organizer, IFT)	January 2019
DES Meeting 2015 (local organizer, IFT)	October 2015

Contact representative of Junior Faculty, Sec. 9, NBI	2022-present
Elected representative of 3rd year Physics students at UAM	2012-13

Outreach and Community Engagement

Projects and initiatives

Conversations about the South Side, seminar series (co-organizer)	Fall 2021
UChicago Police Department Listening Sessions (participant)	2020-21
1st A&A/KICP Outreach Symposium (main organizer)	Oct. 2020
KICP podcast, interviews to early career scientists (co-organizer, every week)	2020-21
KICP postdoc handbook, a guide for new members (co-organizer)	2020

Grants

Physical Science Division EDI Inclusive Climate Grant at UChicago	2021, 22
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Service

Coordinator A&A Community-Engagement Working Group	2020-22
Postdoc office hours	2020-22

Public Talks

Public Talk for Life Long Learning (virtual)	June 2021
Fireside chat with SACNAS UChicago (virtual)	March 2021
Public Talk for Life Long Learning (virtual)	Sept. 2020
Public Talk at Chicago Cultural Center	Oct. 2019
Public Talk at Pint of Science (Madrid)	May 2019
Public Talk at CAUM (Madrid)	Feb. 2019
Talk at High School El Pinar (Madrid)	Feb. 2018
Talk at High School Parque Lisboa (Madrid)	Dec. 2017
Public talk at Madrid Science Week	Nov. 2017

Outreach articles

<i>Descubriendo el lado oscuro del universo con ondas gravitacionales</i>	Feb. 2018
Blog Red Temática de Relatividad y Gravitación (in Spanish)	

Outreach videos

<i>Podrían los agujeros negros ser la materia oscura del universo?</i>	Sep. 2018
Video for the IFT YouTube channel (in Spanish)	

Additional training

Schools

Enrico Fermi School, GWs and Cosmology (Varenna, Italy)	2017
TRR33 Cosmology Winter School (Passo del Tonale, Italy)	2016

Computing Courses

Software Carpentry Workshop, IFT (Madrid, Spain)	2017
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Summer Courses

CERN physics, Universidad Internacional Menéndez Pelayo (Santander, Spain)	2015
CERN physics, Universidad Internacional Menéndez Pelayo (Santander, Spain)	2014
Astronomy of 21st century, UAM (Madrid, Spain)	2012

Publication list

Citations according to inspirehep.net on February 11, 2023

34. *Probing lens-induced gravitational-wave birefringence as a test of general relativity*
S. Goyal, A. Vijaykumar, **JM. Ezquiaga** and M. Zumalacárregui
([arXiv:2301.04826](https://arxiv.org/abs/2301.04826), [citations](#))
33. *Things that might go bump in the night: Assessing structure in the binary black hole mass spectrum*
A. Farah et al. (incl. **JM. Ezquiaga**)
([arXiv:2301.00834](https://arxiv.org/abs/2301.00834), [citations](#))
32. *The Hitchhiker's guide to the galaxy catalog approach for gravitational wave cosmology*
J. Gair et al. (incl. **JM. Ezquiaga**)
([arXiv:2212.08694](https://arxiv.org/abs/2212.08694), [citations](#))
31. *Could "El Gordo" be hinting at primordial quantum diffusion?*
JM. Ezquiaga, J. Garcia-Bellido and V. Vennin
Accepted PRL ([arXiv:2207.06317](https://arxiv.org/abs/2207.06317), [3 citations](#))
30. *New Horizons for Fundamental Physics with LISA*
Arun et al. (incl. **JM. Ezquiaga**)
Living Rev.Rel. 25 (2022) 1, 4 (Section Contributor, [arXiv:2205.01597](https://arxiv.org/abs/2205.01597), [34 citations](#))
29. *Cosmology with the Laser Interferometer Space Antenna*
Auclair et al. (incl. **JM. Ezquiaga**)
(Section Coordinator, [arXiv:2204.05434](https://arxiv.org/abs/2204.05434), [60 citations](#))
28. *Modified gravitational wave propagation with higher modes and its degeneracies with lensing*
JM. Ezquiaga, W. Hu, M. Lagos, M-X. Lin and F. Xu
JCAP 08 (2022) 016 († Supervising student, [arXiv:2203.13252](https://arxiv.org/abs/2203.13252), [7 citations](#))
27. *Spectral sirens: cosmology from the full mass distribution of compact binaries*
JM. Ezquiaga and D. Holz
Phys.Rev.Lett. 129.061102 (2022) ([arXiv:2202.08240](https://arxiv.org/abs/2202.08240), [13 citations](#))
26. *Lensing or luck? False alarm probabilities for gravitational lensing of gravitational waves*
Mesut Çalişkan, **JM. Ezquiaga**, O. Hannuksela and D. Holz
(† Supervising student, [arXiv:2201.04619](https://arxiv.org/abs/2201.04619), [6 citations](#))
25. *Gravitational wave propagation beyond general relativity: waveform distortions and echoes*
JM. Ezquiaga, W. Hu, M. Lagos and M-X. Lin
JCAP 11 (2021) 048 († Supervising student, [arXiv:2108.10872](https://arxiv.org/abs/2108.10872), [14 citation](#))
24. *Please repeat: Strong lensing of gravitational waves as a probe of compact binary and galaxy populations*
Fei Xu, **JM. Ezquiaga** and D. Holz
ApJ 929 (2022) 09 († Supervising student, [arXiv:2105.14390](https://arxiv.org/abs/2105.14390), [26 citations](#))
23. *Modified Gravity and Cosmology: An Update by the CANTATA Network*
E. Saridakis et al (incl. **JM. Ezquiaga**)
(★Invited chapter in book, [arXiv:2105.12582](https://arxiv.org/abs/2105.12582), [145 citations](#))
22. *Search for lensing signatures in the gravitational-wave observations from the first half of LIGO-Virgo's third observing run*
LIGO Scientific and Virgo Collaborations (incl. **JM. Ezquiaga**)

- ApJ 923 (2021) 14 ([arXiv:2105.06384](#), 52 citations)
21. *The missing link in gravitational-wave astronomy: a summary of discoveries waiting in the decihertz range*
M Arca Sedda et al. (incl. **JM. Ezquiaga**)
Exper.Astron. (2021) ([arXiv:2104.14583](#), 15 citations)
 20. *Breaking the mass-sheet degeneracy with gravitational wave interference in lensed events*
P. Cremonese, **JM. Ezquiaga** and V. Salzano
Phys.Rev.D 104 (2021) 02, 023503 († Supervising student, [arXiv:2104.07055](#), 13 citations)
 19. *Hearing gravity from the cosmos: GWTC-2 probes general relativity at cosmological scales*
JM. Ezquiaga
Phys.Lett.B 882 (2021) 136665 ([arXiv:2104.05139](#), 19 citations)
 18. *Gravitational wave lensing beyond general relativity: birefringence, echoes and shadows*
JM. Ezquiaga and M. Zumalacárregui
Phys.Rev.D 102 (2020) 12, 124048 (★ Editors Suggestion, [arXiv:2009.12187](#), 40 citations)
 17. *Phase effects from strong gravitational lensing of gravitational waves*
JM. Ezquiaga, D. Holz, W. Hu, M. Lagos, R. Wald
Phys.Rev.D 103 (2021) 6, 064047 ([arXiv:2008.12814](#), 48 citations)
 16. *Jumping the Gap: Searching for LIGO's Biggest Black Holes*
JM. Ezquiaga and D. Holz
Astrophys.J.Lett. 909 (2021) 2, L23 (★ AAS highlight, [arXiv:2006.02211](#), 48 citations)
 15. *Apparent Superluminality of Lensed Gravitational Waves*
JM. Ezquiaga, W. Hu and M. Lagos
Phys.Rev.D 102 (2020) 2, 023531 ([arXiv:2005.10702](#), 19 citations)
 14. *Prospects for Fundamental Physics with LISA*
E. Baurasse et al. (incl. **JM. Ezquiaga**)
Gen.Rel.Grav. 52 (2020) 8, 81 ([arXiv:2001.09793](#), 188 citations)
 13. *Probing cosmological fields with gravitational wave oscillations*
J. Beltran, **JM. Ezquiaga** and L. Heisenberg
JCAP 04 (2020) 027 ([arXiv:1912.06104](#), 19 citations)
 12. *The exponential tail of inflationary fluctuations: consequences for primordial black holes*
JM. Ezquiaga, J. Garcia-Bellido and V. Vennin
JCAP 03 (2020) 029 ([arXiv:1912.05399](#), 95 citations)
 11. *The missing link in gravitational-wave astronomy: discoveries waiting in the decihertz range*
M Arca Sedda et al. (incl. **JM. Ezquiaga**)
Class.Quant.Grav. 37 (2020) 21, 215011 ([arXiv:1908.11375](#), 85 citations)
 10. *High angular resolution gravitational wave astronomy*
J. Baker et al. (incl. **JM. Ezquiaga**)
([arXiv:1908.11410](#), 36 citations)
 9. *Testing modified gravity at cosmological distances with LISA standard sirens*
LISA Cosmology Working Group (incl. **JM. Ezquiaga**)
JCAP 07 (2019) 024 ([arXiv:1906.01593](#), 135 citations)
 8. *Electromagnetic probes of primordial black holes as dark matter*
Kashlinsky et al. (incl. **JM. Ezquiaga**)

- ([arXiv:1903.04424](#), [32 citations](#))
7. *Dark Energy in light of Multi-Messenger Gravitational-Wave astronomy*
JM. Ezquiaga and M. Zumalacárregui
 Front.Astron.Space Sci. 5 (2018) 44
 (★Invited review at Frontiers, [arXiv:1807.09241](#), [161 citations](#))
 6. *Quantum diffusion beyond slow-roll: implications for primordial black-hole production*
JM. Ezquiaga and J. García-Bellido
 JCAP 2018 (2018) no.08, 018 ([arXiv:1805.06731](#), [81 citations](#))
 5. *Dark Energy after GW170817: dead ends and the road ahead*
JM. Ezquiaga and M. Zumalacárregui
 Phys.Rev.Lett. 119.251304 (2017)
 (★Editors' suggestion and Physics Viewpoint, [arXiv:1710.05901](#), [733 citations](#))
 4. *Primordial Black Hole production in Critical Higgs Inflation*
JM. Ezquiaga, J. García-Bellido and E. Ruiz Morales
 Phys.Lett.B 776. 345-349 (2018) ([arXiv:1705.04861](#), [200 citations](#))
 3. *Field redefinitions in theories beyond Einstein gravity using the language of differential forms*
JM. Ezquiaga, J. García-Bellido and M. Zumalacárregui
 Phys.Rev.D 95, 084039 (2017)([arXiv:1701.05476](#), [25 citations](#))
 2. *Speed of Gravitational Waves and the Fate of Scalar-Tensor Gravity*
 D. Bettoni, **JM. Ezquiaga**, K. Hinterbichler and M. Zumalacárregui
 Phys.Rev.D 95, 084029 (2017) ([arXiv:1608.01982](#), [164 citations](#))
 1. *Towards the most general scalar-tensor theories of gravity: a unified approach in the language of differential forms*
JM. Ezquiaga, J. García-Bellido and M. Zumalacárregui
 Phys.Rev.D 94, 024005 (2016) ([arXiv:1603.01269](#), [41 citations](#))

Presentation list

Presentation slides and videos from selected talks can be found at ezquiaga.github.io/talks

Invited seminars

34. IFAE Theory Seminar (Barcelona, Spain)	Feb. 2023
33. Cosmic Explorer Science Talk (virtual)	March 2022
32. University of Hawaii Cosmology Seminar (virtual)	March 2022
31. IAS Astrophysics Seminar (Princeton, US)	March 2022
30. Winnipeg Theory Institute Colloquium (virtual)	Feb. 2022
29. Winnipeg Physics Colloquium (virtual)	Feb. 2022
28. CITA seminar (virtual)	Feb. 2022
27. UMass Dartmouth Seminar (virtual)	Dec. 2021
26. CfA Harvard Seminar (virtual)	Nov. 2021
25. University of Pennsylvania Astronomy & Astrophysics Seminar (virtual)	Nov. 2021
24. Caltech TAPIR seminar (Pasadena, US)	Oct. 2021
23. Perimeter Institute Strong Gravity seminar (virtual)	Oct. 2021
22. University of California at Davis seminar (virtual)	Sep. 2021
21. Johns Hopkins University seminar (Baltimore,US)	Sep. 2021
20. Columbia Theory seminar (virtual)	Sep. 2021

19. LIGO–Virgo webinar for first lensing search (virtual, co-presenter)	May 2021
18. FNAL astro seminar (virtual)	Oct. 2020
17. SISSA/IFPU gravity webminar (virtual)	Oct. 2020
16. University of Illinois Urbana-Champaign (virtual)	Sept. 2020
15. University of Minnesota (US)	Feb. 2020
14. DESI lunch seminar UC Berkeley (US)	Dec. 2019
13. Institute of Theoretical Astrophysics University of Oslo (Norway)	June 2018
12. ITP Heidelberg Cosmo Seminar (Germany)	June 2018
11. University of Geneva Cosmo Seminar (Switzerland)	June 2018
10. Max Planck Institute Astrophysics Cosmo Seminar (Germany)	May 2018
9. CERN Cosmology Seminar (Switzerland)	May 2018
8. EPFL High Energy Theoretical Physics Seminar (Switzerland)	Apr. 2018
7. De Madrid al Cosmos Seminar UCM (Spain)	Mar. 2018
6. ICCUB Seminar University of Barcelona (Spain)	Feb. 2018
5. Cosmology Seminar University of Cape Town (South Africa)	Dec. 2017
4. Caltech Theoretical Cosmology Seminar (US)	Jun. 2017
3. Lawrence Berkeley National Laboratory INPA Seminar (US)	Jun. 2017
2. Stanford Institute for Theoretical Physics Seminar (US)	May 2017
1. Nordita/OKC High Energy Physics Theory Seminar (Sweden)	May 2016

Talks at conferences (*invited speaker)

41.*EuCAPT Annual Symposium (CERN)	May 2023
40.*Progress in Old and New Themes in Cosmology, (Avignon, France)	May 2023
39. 3rd Gravitational Wave Meeting in Denmark, (Aalborg)	Jan. 2023
38. NHFP Symposium, (Space Institute, Baltimore)	Sept. 2022
37.*8th PAX Meeting, (MIT, Boston)	Aug. 2022
36. Aspen Center for Physics, (Aspen)	June 2022
35. Intermediate Mass Black Holes, (Puerto Rico)	May. 2022
34.*LISA Fundamental Physics Meeting, (Brussels)	April 2022
33.*APS April Meeting, (NYC)	April 2022
32. NASA Hubble Fellowship Program Symposium, (virtual)	Oct. 2021
31.*KICP Colloquium Postdoc Jamboree, (Chicago)	Oct. 2021
30. COSMO'21, (virtual)	Aug 2021
29. European Physical Society HEP, (virtual)	July 2021
28. Amaldi 14, (virtual)	July 2021
27. Division of Particles and Fields APS meeting, (virtual)	July 2021
26.*1st EuCAPT annual symposium, (lightening talk, virtual)	May 2021
25. April APS meeting, (virtual)	April 2021
24. Pacific Coast Gravity meeting, (virtual)	March 2021
23. Moriond Gravity, (virtual)	March 2021
22. Primordial black holes confront GWs, (invited panelist, virtual)	Feb. 2021
21. Midwest Relativity Meeting, (virtual)	Oct. 2020
20. NASA Hubble Fellowship Program Symposium, (virtual)	Sept. 2020
19. XIII LISA Symposium, (virtual)	Aug. 2020
18. Cosmology from Home, (virtual)	Aug. 2020
17.*7th LISA Consortium, (virtual)	July 2020
16. April APS meeting, (virtual)	April 2020
15. GRAvedad, Supergravedad y Supercuerdas meeting, IFT (Madrid, Spain)	Dec. 2019
14. NASA Hubble Fellowship Program Symposium (Washington DC)	Oct. 2019
13.*3rd CANTATA Meeting (Malta)	Mar. 2019

12. Testing Gravity (Vancouver, Canada)	Jan. 2019
11.*A fresh look at the Universe CERN (Geneva, Switzerland)	July 2018
10. The dawn of GWs science MITP program (Mainz, Germany)	June 2018
9. 53rd Rencontres de Moriond Cosmology session (La Thuile, It.)	Mar. 2018
8.*53rd Rencontres de Moriond ElectroWeak session (La Thuile, It.)	Mar. 2018
7. 29th International Texas Symposium (Cape Town, South Africa)	Dec. 2017
6. DESY Theory Workshop 2017 (Hamburg, Germany)	Sep. 2017
5. Understanding Cosmological Observations (Benasque, Spain)	Aug. 2017
4. VIII CPAN Days (Zaragoza, Spain)	Nov. 2016
3. V Postgraduate Meeting on Theoretical Physics (Oviedo, Spain)	Nov. 2016
2. 12th Workshop Dark Side of the Universe (Bergen, Norway)	July 2016
1. 11th Iberian Cosmology Meeting (Vila do Conde, Portugal)	Mar. 2016

Posters

5. NBIA Day (Copenhagen)	Feb. 2023
4. KICP Poster session (Chicago)	Aug. 2022
3. LIGO-Virgo Collaboration meeting (virtual)	Sept. 2020
2. Testing Gravity (Vancouver, Canada)	Jan. 2019
1. TRR33 Cosmology Winter School (2nd prize , Italy)	Dec. 2016

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