Curriculum Vitae

Saeed Rastgoo

Assistant Professor
Department of Physics, and
Department Mathematical and Statistical Sciences, and
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Education

Ph.D., Physics (with distinction): Universidad de la Republica, Uruguay, Aug. 2012

- Advisor: Prof. Rodolfo Gambini
- Dissertation: *Two dimensional models in loop quantum gravity*

M.Sc., Physics: Shiraz University, Shiraz, Iran, July. 2006

- Advisor: Prof. Azizollah Azizi
- Dissertation: *Dynamical cellular networks: A new approach to quantum gravity*

B.Sc., Physics: Kharazmi University, Tehran, Iran, Dec. 2002

Positions Held

Assistant Professor, University of Alberta, Canada, July 2022-Present

Assistant Professor, York University, Canada, Jan. 2020-June 2022

Assistant Professor, Monterrey Institute of Technology (ITESM), Mexico, Oct. 2018-Dec. 2019

Postdoctoral Fellow, Universidad Autonoma Metropolitana, Mexico, Sep. 2014-Aug. 2018

Postdoctoral Fellow, UNAM (Centro de Ciencias Matematicas), Mexico, Sep. 2012-Aug. 2014

Grants

- Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery Grant, "*Probing the quantum gravitational structure of spacetime via black holes and gravitational waves*", Reference Number: RGPIN-2021-03644, 120K CAD, Apr. 2021 – Mar. 2026
- NSERC Discovery Launch Supplement, "*Probing the quantum gravitational structure of spacetime via black holes and gravitational waves*", Reference Number: DGECR-2021-00302, 12.5K CAD, Apr. 2021 – Mar. 2026
- Academic Innovation Fund (AIF) for "EXPLORE: Experiential Learning Opportunity through Research and Exchange", York University, 45840 CAD, 2021-2026
  Other project members: Nassim Bozorgnia, Jürgen Schaffner-Bielich, Laura Sagunski, Sean Tulin
- Junior Faculty Fund, York University, Canada, 2K CAD, Winter 2021
- YUFA Minor Research Grant, York University, Canada, 3K CAD, Winter 2021
- Junior Faculty Fund, York University, Canada, 1.1K, Winter 2020
- YUFA Minor Research Grant, York University, Canada, 2K, Winter 2020
- Project grant, CONACyT (National Council of Science and Technology), Mexico, 100K MXN, 2015-2017
  PI: Hugo Morales-Técotl

Fellowships and Awards

- "National Researcher Member" medal and recognition, Monterrey Institute of Technology, 2019
- CONACyT postdoctoral fellowship, Mexico, 2016-2018
- PRODEP postdoctoral fellowship, Universidad Autónoma Metropolitana (UAM-I), Mexico, 2014-2016
- Research grant, SNI (National System of Researchers), Mexico, 2014-2020
- DGAPA postdoctoral fellowship, Universidad Nacional Autónoma de México (UNAM), Mexico, 2012-2014
- Research grant, ANII (National Agency of Research and Innovations), Uruguay, Jun. 2011-May 2013
- "Honorable Mention", *Gravity Research Foundation*, 2011
- ANII Ph.D. fellowship, Universidad de la República, Uruguay, 2008-2010
- PEDECIBA Ph.D. fellowship, Universidad de la República, Uruguay, 2007-2008

Publications

The list of authors in most of the items below is in alphabetical order.

Research papers

1. Angel Garcia-Chung, Matthew F. Carney, James B. Mertens, Aliasghar Parvizi, Saeed Rastgoo, Yaser Tavakoli, *What do gravitational wave detectors say about polymer quantum effects?*, arXiv:2208.09739 [gr-qc].

2. Samantha Hergott, Viqar Husain, Saeed Rastgoo, *Model metrics for quantum black hole evolution: Gravitational collapse, singularity resolution, and transient horizons*, Phys. Rev. D **106**, 046012 (2022), arXiv:2206.06425 [gr-qc].

3. S. Rastgoo, S. Das, *Probing the interior of the Schwarzschild black hole using congruences: LQG vs. GUP*, Universe 2022, 8(7), 349, arXiv:2205.03799 [gr-qc].

4. K. G. Arun, ..., S. Rastgoo, et. al., *New Horizons for Fundamental Physics with LISA*, Living Rev. Relativ. **25**, 4 (2022), arXiv:2205.01597 [gr-qc].

5. P. Auclair, ..., S. Rastgoo, et. al., *Cosmology with the Laser Interferometer Space Antenna*, To appear in LRR, arXiv:2204.05434 [astro-ph.CO].

6. N. Becker, L. Sagunski , L. Prinz , S. Rastgoo, *Circularization vs. Eccentrification in Intermediate Mass Ratio Inspirals inside Dark Matter Spikes*, Phys. Rev. D **105**, 063029 (2022), arXiv:2112.09586 [gr-qc].

7. A. Addazi, ..., S. Rastgoo, et. al., *Quantum gravity phenomenology at the dawn of the multi-messenger era – A review*, Prog. Part. Nucl. Phys. 103948 2022, arXiv:2111.05659 [hep-ph].

8. K. Blanchette, S. Das, S. Rastgoo, *Effective GUP-modified Raychaudhuri equation and black hole singularity: four models*, J. High Energ. Phys. **09** (2021) 62, arXiv:2105.11511 [gr-qc].

9. A. Garcia-Chung, J. B. Mertens, S. Rastgoo, Y. Tavakoli, P. Vargas Moniz, *Propagation of quantum gravity-modified gravitational waves on a classical FLRW spacetime*, Phys. Rev. D **103**, 084053 (2021), arXiv:2012.09366 [gr-qc].

10. P. Bosso, O. Obregón, S. Rastgoo, W. Yupanqui, *Deformed algebra and the effective dynamics of the interior of black holes*, Class. Quantum Grav. **38** 145006 (2021), arXiv:2012.04795 [gr-qc].

11. K. Blanchette, S. Das, S. Hergott, S. Rastgoo, *Black hole singularity resolution via the modified Raychaudhuri equation in loop quantum gravity*, Phys. Rev. D **103**, 084038 (2021), arXiv:2011.11815 [gr-qc].

12. R. Gambini, S. Rastgoo, J. Pullin, *Gravitation in terms of observables 2: the algebra of fundamental observables*, Class. Quantum Grav. **37** 145013 (2020), arXiv:2003.01589 [gr-qc].

13. H. A. Morales-Técotl, S. Rastgoo, J. C. Ruelas, *Effective dynamics of the Schwarzschild black hole interior with inverse triad corrections*, Ann. Phys. **426C** (2021) 168401, arXiv:1806.05795 [gr-qc].

14. Y. Bonder, A. Garcia-Chung, S. Rastgoo, *Bounds on the Polymer Scale from Gamma Ray Bursts*, Phys. Rev. D **96**, 106021 (2017), arXiv:1704.08750 [gr-qc].

15. H. A. Morales-Técotl, S. Rastgoo, J. C. Ruelas, *Path integral polymer propagator of relativistic and non-relativistic particles*, Phys. Rev. D **95**, 065026 (2017), arXiv:1608.04498 [gr-qc].

16. A. Corichi, J. Olmedo, S. Rastgoo, *Callan-Giddings-Harvey-Strominger vacuum in loop quantum gravity and singularity resolution*, Phys. Rev. D **94**, 084050 (2016), arXiv:1608.06246 [gr-qc].

17. S. Rastgoo, M. Requardt, *Emergent Space-Time via a Geometric Renormalization Method*, Phys. Rev. D **94**, 124019 (2016), arXiv:1606.08073 [gr-qc].

18. S. Rastgoo, Y. Tavakoli, J. C. Fabris, *Phenomenology of a massive quantum field in a cosmological quantum spacetime*, Ann. Phys. **415C** (2020) 168110, arXiv:1511.08823 [gr-qc].

19. A. Corichi, A. Karami, S. Rastgoo, T. Vukašinac, *Constraint Lie algebra and local physical Hamiltonian for a generic 2D dilatonic model*, Class. Quantum Grav. **33** 035011 (2016), arXiv:1508.03036 [gr-qc].

20. H. A. Morales-Técotl, D. H. Orozco-Borunda, S. Rastgoo, *Polymer quantization and the saddle point approximation of partition functions*, Phys. Rev. D **92**, 104029 (2015), arXiv:1507.08651 [gr-qc].

21. S. Rastgoo, M. Requardt, *The Structurally Dynamic Cellular Network and Quantum Graphity Approaches to Quantum Gravity and Quantum Geometry - A Review and Comparison*, Journal of Cellular Automata 10/2015; **10**(5-6):341-392, arXiv:1501.00391 [gr-qc].

22. S. Rastgoo, *A local true Hamiltonian for the CGHS model in new variables*, arXiv:1304.7836 [gr-qc], 2013.

23. R. Gambini, J. Pullin, S. Rastgoo, *Reply to comment on "Small Lorentz violations in quantum gravity: do they lead to unacceptably large effects?"*, Class. Quantum Grav. **29** 088002 (2012).

24. R. Gambini, J. Pullin, S. Rastgoo, *Quantum scalar field in quantum gravity: the propagator and Lorentz invariance in the spherically symmetric case*, Gen. Relat. Gravit. **43** 3569 (2011), arXiv:1105.0667 [gr-qc].

25. R. Gambini, J. Pullin, S. Rastgoo, *Small Lorentz violations in quantum gravity: do they lead to unacceptably large effects?*, Class. Quantum Grav. **28** 155005 (2011), arXiv:1106.1417 [gr-qc].

26. R. Gambini, J. Pullin, S. Rastgoo, *New variables for 1+1 dimensional gravity*, Class. Quantum Grav. **27** 025002 (2010), arXiv:0909.0459 [gr-qc].

27. R. Gambini, J. Pullin, S. Rastgoo, *Quantum scalar field in quantum gravity: the vacuum in the spherically symmetric case*, Class. Quantum Grav. **26** 215011 (2009), arXiv:0906.1774 [gr-qc].

Conference papers and proceedings

1. A. Garcia-Chung, J. B. Mertens, S. Rastgoo, Y. Tavakoli, P. Vargas Moniz, *A model of polymer gravitational waves: theory and some possible observational consequences*, Proceedings of the Sixteen Marcel Grossmann Meeting on General Relativity, arXiv:2111.00292 [gr-qc], 2021.

2. K. Blanchette, S. Das, S. Hergott, S. Rastgoo, *Effective black hole interior and the Raychadhuri equation*, Proceedings of the Sixteen Marcel Grossmann Meeting on General Relativity, arXiv:2110.05397 [gr-qc], 2021.

3. H. A. Morales-Técotl, D. H. Orozco-Borunda, S. Rastgoo, *Polymerization, the Problem of Access to the Saddle Point Approximation, and Thermodynamics*, in Proceedings of the Fourteenth Marcel Grossmann Meeting on General Relativity, World Scientific, 2017, ISBN: 978-9813226593, arXiv:1603.08076 [gr-qc].

4. R. Gambini, J. Pullin, S. Rastgoo, *Quantum scalar field in quantum gravity with spherical symmetry*, J. Phys.: Conf. Ser. **360** 012005 (2012).

Large Collaborations

- Member of the LISA Consortium, 2021-Present
  - LISA Fundamental Physics Working Group (FPWG)
  - LISA Cosmology Working Group (CosWG)
  - LISA Astrophysics Working Group (AstroWG)
  - LISA group leader at the University of Alberta
- Member of LISA-Canada, 2021-Present
- Member of, and University of Alberta's representative in "European COoperation in Science and Technology (COST)", project "Quantum gravity phenomenology in the multi-messenger approach", March 2020-Present
- Member of Cosmic Explorer
- EXPLORE International Programme

Teaching

Undergraduate courses:

2022

- *Undergraduate Research (PHYS4310)*, York University, Canada

2021

- *Engineering Mechanics (PHYS 1800)*, York University, Canada
- *Classical Mechanics: Lagrangian and Hamiltonian formulations (PHYS 3010)*, York University, Canada
- *Undergraduate Research (PHYS4310)*, York University, Canada

2020

- *Engineering Mechanics (PHYS 1800)*, York University, Canada
- *Classical Mechanics: Lagrangian and Hamiltonian formulations (PHYS 3010)*, York University, Canada
- *Undergraduate Research (PHYS4310)*, York University, Canada

2019

- *Physics I (Mechanics)*, Monterrey Institute of Technology, Mexico
- *Physics II (Fluids, Oscillations, Waves, Thermodynamics)*, Monterrey Institute of Technology, Mexico
- *Mathematics and Physics for Architecture and Industrial Design*, Monterrey Institute of Technology, Mexico

Graduate courses:

2021

- *General Relativity & Cosmology (PHYS 5230)*, York University, Canada

2018

- *Gravitation II*, Universidad Autonoma Metropolitana, Mexico

2016

- *Quantum Field Theory I*, Universidad Autonoma Metropolitana, Mexico
- *Gravitation I*, Universidad Autonoma Metropolitana, Mexico

2015

- *Classical and Quantum Black Holes*, Universidad Autonoma Metropolitana, Mexico

Supervision

PhD students:

- Federica Fragomeno, January 2022-Present
- Keagan Blanchette, September 2020-2022 (left academia for a prestigious position in data science in industry)
- Samantha Hergott, September 2020-Present

Master's students:

- Jorden Roberts, September 2021-Present

Undergraduate students:

- Rosalyn Chan Yoke Ling, PHYS 4310 (undergraduate research course), Topic: Modified gravitational collapse, York University, Canada, Jan.-May 2022
- Diego Montalvo, PHYS 4310 (undergraduate research course), Topic: Gravitational waves, black holes and quantum gravity, York University, Canada, Jan.-May 2022
- Anvir Basra, PHYS 4310 (undergraduate research course), Topic: Gravitational waves, black holes and quantum gravity, York University, Canada, Jan.-May 2022
- Hazkeel Khan, EXPLORE International Programme, Topic: Probing dark matter with gravitational waves, York University and Goethe University, Canada, Jan.-May 2022
- Nifia Garg, EXPLORE International Programme, Topic: Probing dark matter with gravitational waves, York University and Goethe University, Canada, Jan.-May 2022
- Duc Khoa, EXPLORE International Programme, Topic: Probing dark matter with gravitational waves, York University and Goethe University, Canada, Jan.-May 2022
- Diego Montalvo, PHYS 4310 (undergraduate research course), Topic: Gravitational waves, black holes and quantum gravity, York University, Canada, Oct.-Dec. 2021
- Andrew Tamplin, PHYS 4310 (undergraduate research course), Topic: Effective dynamics of the interior of black holes in quantum gravity, York University, Canada, May-Sep. 2021
- Rayhan Walia, PHYS 4310 (undergraduate research course), Topic: Quantum gravity modified dynamics of the interior of the Schwarzschild black hole, York University and University of Toronto, Canada, May-Sep. 2021
- Diego Montalvo, EXPLORE International Programme, Topic: Probing dark matter with gravitational waves, York University and Goethe University, Canada, May-Sep. 2021
- Nour Khalil, EXPLORE International Programme, Topic: Probing dark matter with gravitational waves, York University and Goethe University, Canada, May-Sep. 2021

- Ida Schmidt, EXPLORE International Programme, Topic: Probing dark matter with gravitational waves, York University and Goethe University, Canada, May-Sep. 2021
- Lukas Hölker, EXPLORE International Programme, Topic: Probing dark matter with gravitational waves, York University and Goethe University, Canada, May-Sep. 2021
- Tony Chu, PHYS 4310 (undergraduate research course), Topic: Hamiltonian gauge systems, York University, Canada, Jan.-Jun. 2020

Professional Memberships

- International Society for Quantum Gravity (ISQG), 2021-Present
- LISA Consortium, 2021-Present
- LISA-Canada, 2021-Present
- Canadian Association of Physicists (CAP), 2020-Present
- Canadian Institute of Particle Physics (IPP), 2020-Present
- European COoperation in Science and Technology (COST), 2020-Present
- SNI (National System of Researchers), Mexico, 2014-2020
- Accredited Evaluator of CONACyT (RCEA member), 2015-2109
- SNI, Uruguay, 2011-2013

Editorial and Refereeing

- Invited Guest Editor, *Frontiers in Astronomy and Space Sciences*, Dec. 2021
- Invited Guest Editor, *Symmetry*, Dec. 2021
- Topic Editor, *Symmetry*, 2021-present
- Referee: *Classical and Quantum Gravity, Physical Review D, International Journal of Modern Physics A (IJMPA), AMS Mathematical Reviews, Foundations of Physics, Europhysics Letters (EPL), The European Physical Journal Plus (EPJP), Universe, Entropy, Symmetry, Gravitation and Cosmology*
- Member of the Mexican CONACyT referee committee, for
  - Fellowships awarded for studying abroad, 2015
  - Projects to receive grant for "Investigación Científica Básica 2015", Oct. 2015

Talks and Presentations

Invited Plenary Talks:

- **Fundamental physics with LISA**, *LISA-Canada 2022*, Aug. 25, 2022, (remote talk)
- **A review of loop quantum gravity and some of its results**, *National Conference on Gravity and Cosmology*, Jan. 27-28, 2021, The Physics Society of Iran and Beheshti University, Iran (remote talk)
- **Effective evolution of the interior of the Schwarzschild black hole in non-perturbative quantum gravity**, *The Winter Meeting on Geometry and Physics*, Jan. 23-25, 2019, University of San Luis Potosi (UASLP), Mexico
- **Dealing with further corrections to the effective dynamics of the Schwarzschild's interior**, *MexiLazos 201*8, Nov. 26-27, 2018, Universidad Autonoma Metropolitana - Iztapalapa, Mexico City, Mexico
- **Black hole interior in non-perturbative canonical quantum gravity: the singularity resolution**, *The Fifth International Conference on Mathematics and its Applications (5CIMA)*, Sep. 3-7, 2018, University of Puebla (BUAP), Mexico
- **The continuum limit of metric spaces: a renormalization framework for the emergence of space(time)**, *MexiLazos 2017*, Nov. 16-17, 2017, ICN, UNAM, Mexico City, Mexico
- **Geometry From Renormalized Pre-geometry**, *MexiLazos 2016*, Nov. 10-11, 2016, Universidad Autonoma San Luis Potosi, Mexico
- **Black hole singularity resolution in loop quantum gravity**, *Field Theory, Gravitation and Cosmology Workshop (Taller de Teoría de Campo, Gravitación y Cosmología)*, Oct. 17-18, 2016, Universidad de Puebla, Mexico
- **Polymer Quantization, Saddle Point Issue, and Black Hole Thermodynamics**, *MexiLazos 2015*, Nov. 12, 2015, IIMAS, Mexico City, Mexico
- **Towards the resolution of the singularity of the CGHS black hole in loop quantum gravity**, *MexiLazos 2014*, Nov. 14, 2014, Universidad de Puebla, Puebla, Mexico
- **Constraint Lie algebra and true local Hamiltonian for all the 2D dilatonic models**, *MexiLazos 2013*, Nov. 7-8, 2013, Universidad Autónoma Metropolitana (UAM), Mexico City, Mexico
- **Vacuum state and propagator of the scalar field in spherically symmetric loop quantum gravity**, *MexiLazos 2012*, Nov. 9-10, 2012, UNAM, Morelia, Mexico

Seminars:

- **Nonperturbative quantum gravity, black holes and gravitational waves**, Biruni Observatory and the Physics Department of Shiraz University, Jan. 24, 2022, Shiraz, Iran (remote talk)
- **Effective Schwarzschild interior, Raychaudhuri equation, and singularity resolution**, Gravitation and Field Theory Department, ICN, UNAM, Oct. 29, 2020, Mexico City, Mexico (remote talk)
- **Loop quantum gravity and black hole interior**, Cosmology Group, Physics Department, Sharif University of Technology, Aug. 9, 2020, Iran (remote talk)
- **A glimpse of quantum gravity and quantum black holes**, Colloquiums of Department of Physics & Astronomy, York University, May 3, 2020, Canada
- **How is spacetime quantized in Loop Quantum Gravity?**, Universidad de Guanajuato Campus León, División de Ciencias e Ingenierías, Sep. 12, 2019, Mexico
- **Effective polymer dynamics of Schwarzschild interior via path integral: challenges and new results**, Theoretical Gravity Group, Department of Physics & Astronomy, Louisiana State University, May 9, 2019, USA
- **Nonperturbative canonical quantum gravity: basics and some applications**, Universidad de Guanajuato Campus León, División de Ciencias e Ingenierías, Feb. 19, 2019, Mexico
- **Treatment of black holes in nonperturbative canonical quantum gravity**, Instituto de Física, Universidad de la República, Apr. 16, 2018, Uruguay
- **Loop Quantum Gravity, Polymer Quantization, and The Relation Between Them**, Escuela Superior de Física y Matemáticas, IPN, Feb. 23, 2018, Mexico City, Mexico
- **Confronting Polymer Quantization of Photons with GRB Experiments**, *AmsterDark* meeting, University of Amsterdam, Jun. 28, 2017, The Netherlands
- **Loop Quantum Gravity: An Introduction**, Physics Department, UAM-I , Mar. 7, 2017, Mexico City, Mexico
- **Emergent Space(time) as Renormalized Pre-geometry**, The Quantum Gravity Group, Radboud University, Feb. 22, 2017, Nijmegen, The Netherlands
- **Quantum black holes, information paradox and some of the proposed solutions**, Gravitation and Field Theory Department, ICN, UNAM, Nov. 26, 2015, Mexico City, Mexico
- **The black hole information paradox and some of its proposed solutions**, Physics Department, UAM-I , Feb. 10, 2015, Mexico City, Mexico
- **Resolving the singularity of the CGHS black hole in loop quantum gravity**, The Gravitation and Field Theory Department, ICN, UNAM, Apr. 24, 2014, Mexico City, Mexico

- **A beginner introduction to loop quantum gravity**, Physics Department, University of Michoacan (UMSNH), May 31, 2013, Morelia, Mexico
- **Ashtekar's Variables in 1+1 Dimensional Gravity**, Centro de Estudios Científicos (CECs), Sep. 30, 2009, Valdivia, Chile

Contributed Talks:

- **Polymer gravitational waves and its consequences: a model**, *9th Tux Workshop on Quantum Gravity*, Feb. 14-18, 2022, Tux, Austria
- **Nonperturbative quantization of gravitational waves, and their signatures: a model**, *9th LISA Cosmology Working Group Workshop*, Dec. 8-9, 2021, Online
- **Non-perturbative quantization of gravitational waves, a model**, *COST CA18108 Second Annual Conference*, Oct. 6-8, 2021, Corfu, Greece
- **Effective black hole interior and the Raychadhuri equation**, *MG16*, Jul. 5-10, 2021, Rome, Italy
- **A model of polymer gravitational waves: theory and some possible observational consequences**, *MG16*, Jul. 5-10, 2021, Rome, Italy
- **Interior of Schwarzschild: further quantum corrections, issues and remedies**, *Seventh Tux Workshop on Quantum Gravity*, Feb. 11-15, 2019, Tux, Austria
- **Emergent Space(time) from Renormalizing Discrete Metric Spaces**, *Loops 17*, Jul. 3-7, 2017, University of Warsaw, Poland
- **Emergent continuous spacetime via a geometric renormalization method**, *Fifth Tux Workshop on Quantum Gravity*, Feb. 13-17, 2017, Tux, Austria
- **Spacetime emergence through a geometric renormalization method**, *GR21*, Jul. 10-15, 2016, Columbia University, New York, USA
- **From discrete to continuum: Lessons from the Gromov-Hausdorff space**, *Fourth Tux Workshop on Quantum Gravity*, Feb. 18, 2016, Tux, Austria
- **Polymerization, the Problem of Access to the Saddle Point Approximation, and Thermodynamics**, *Fourteenth Marcel Grossmann Meeting - MG14*, Jul. 12-18, 2015, University of Rome La Sapienza, Rome, Italy
- **Dilatonic black holes in LQG: two recent results**, *Loops 15*, Jul. 6-10, 2015, Erlangen, Germany
- **Polymerization and saddle point approximation issues in dilatonic black holes: a toy model**, *Third EFI winter conference on Quantum Gravity*, Feb. 16-20, 2015, Tux, Austria

- **On the singularity resolution of the CGHS black hole**, *Second EFI winter conference on quantum gravity, black holes and dynamics*, Feb. 10-14, 2014, Tux, Austria
- **Towards resolution of the singularity of the CGHS black hole**, *International Loop Quantum Gravity Seminars*, Dec. 10, 2013, Online talk
- **Constraint Lie algebra and true local Hamiltonian for the CGHS model**, *Loops 13*, Jul. 22-26, 2013, Perimeter Institute for Theoretical Physics, Waterloo, Canada
- **An analysis of the CGHS model in new variables**, *GR20*, Jul. 7-13, 2013, University of Warsaw, Warsaw, Poland
- **Ashtekar's Variables for 1+1 Gravity,** *Loops 11*, May 23-28, 2011, Madrid, Spain
- **Dynamical Cellular Networks,** Institute of theoretical Physics and Mathematics (IPM), 2006, Tehran, Iran

Scientific Visits and Conference Participation

Visits:

- Instituto de Física, Universidad de la República, Uruguay, Apr. 9 - 20, 2018
- Institute for Theoretical Physics, University of Amsterdam (UvA), The Netherlands, Jun. 2017
- The Quantum Gravity Group, Radboud University, Nijmegen, The Netherlands, Feb., 2017
- Centro de Estudios Científicos (CECs), Valdivia, Chile, Sep. 20 - Oct. 5, 2009

Conference Participation:

- **CarloFest**, Conference for the celebration of the 60th birthday of Carlo Rovelli, May 23-27, 2016, Marseilles, France
- **Summer School on Cosmology**, Aug. 4-15, 2014, ICTP, Trieste, Italy
- **SIGRAV graduate school in contemporary relativity and gravitational physics, XI Edition: Gravity and the Quantum**, Jun. 1-6, 2014, Centro di Cultura Scientifica Alessandro Volta, Como, Italy
- **Second Erlangen Fall School on Quantum Geometry**, Oct. 7-11, 2013, Friedrich-Alexander-Universitat Erlangen-Nurnberg (FAU), Erlangen, Germany
- **Workshop on scalar fields and dark matter**, Oct. 2-4, 2013, University of Michoacan, Morelia, Mexico
- **Quantum Gravity in the Southern Cone V**, Jul. 28-31, 2010, Buenos Aires, Argentina

- **International School in Quantum Gravity**, Jul. 19-27, 2010, La Plata, Argentina
- **GR19**, Jul. 5-9, 2010, Mexico City, Mexico
- **PASI Quantum Gravity Summer School**, Jun. 23 - Jul. 3, 2010, Morelia, Mexico
- **School on Gauge/Gravity Correspondence**, May 19-30, 2008, ICTP, Trieste, Italy
- **Quantum Gravity in the Southern Cone IV**, Oct. 22-25, 2007, Punta del Este, Uruguay
- **Second School Of Cosmology**, Aug. 28 - Sep. 2, 2004, Institute of theoretical Physics and Mathematics (IPM), Tehran, Iran

Service

Committees:

- Faculty of Science Committee on Teaching and Learning (CoTL), York University, Sep. 2021-Jan. 2022
- Faculty of Science Committee on Examinations and Academic Standards, York University, Mar.-May. 2021
- Department of Physics and Astronomy Careers Committee, York University, 2020-2022
- Faculty of Science Appeals Committee, York University, Jul. 2020 - Apr. 2021
- Faculty of Science Petitions Committee, York University, Jan.-Jul. 2020

Defense Committees:

- Chair of the committee of Nelson Nunes (MSc student), York University, 2021

Research Evaluation Committees:

- Fabian Yilber Bautista Chivata (PhD student), York University, 2021
- Nima Ronaghikhameneh (PhD student), York University, 2021

Event Organization

- LISA Canada Workshop, 27-29 Apr. 2021
- Joint Journal Clubs (York University, University of New Brunswick, University of Lethbridge, University of Washington at St. Louis, University of Colima), Sep. 2020-Present

Outreach

- **Outreach and multimedia appearances**:
  - *The strange spacetime near a black hole*, Talk presented to high school students at Collège de Bois-de-Boulogne, Montreal, Quebec, Canada, Feb. 15, 2022
  - *Black holes: what we see on the outside, what happens inside*, Royal Astronomical Society of Canada, Toronto Centre and David Dunlap Observatory, Canada, Feb. 11, 2022
  - *Black holes: where gravity meets the quantum*, York University Allan I. Carswell Observatory TeleTube talk, Mar. 31, 2021
  - *Math and Physics Podcast*, Mar. 6, 2021
  - *Reason and Science Podcast*, Aug. 1, 2020
  - *Seeing the unseeable: the first photo of a black hole (Viendo lo invisible y misterioso: primera foto de un agujero negro)*, in Spanish, for bachelor students and public, Monterrey Institute of Technology, Campus Leon, Mexico, Apr. 30, 2019
  - *Black holes: wonders of the universe (Agujeros negros: maravillas del universo)*, in Spanish, for bachelor students and public, Monterrey Institute of Technology, Campus Leon, Mexico, Nov. 21, 2018
- **Workshops and classes**:
  - *Leader*, workshops on construction of four Newtonian telescopes including the main mirror, Kharazmi Universiy, 1999-2003
  - *Instructor*, theoretical course on amateur astronomy, observation, and telescope making, Kharazmi Universiy, 1999-2003
- **Astronomical observation nights**:
  - *Leader and organizer*, event for students and public, Monterrey Institute of Technology, Campus Leon, Mexico, Nov. 21, 2018
  - *Leader and organizer*, numerous events for students and public, Tehran, Iran, 1998-2005

References

- **Professor Rodolfo Gambini** (Ph.D. advisor)
  Instituto de Física, Facultad de Ciencias
  Universidad de la Republica
  Igua 4225, Montevideo 11400
  Uruguay
  Phone: (+598) 2 525 8618 int. 311
  email: rgambini@fisica.edu.uy

- **Professor Jorge Pullin**
  Department of Physics and Astronomy
  Louisiana State University
  Baton Rouge, LA 70803-4001
  USA
  Phone: (+1) 225 578 0464
  email: pullin@lsu.edu

- **Professor Viqar Husain**
  Department of Mathematics and Statistics
  University of New Brunswick
  Fredericton, NB E3B 5A3
  Canada
  Phone: (+1) 506 443 3909
  email: vhusain@unb.ca

- **Professor Saurya Das**
  Department of Physics and Astronomy
  University of Lethbridge
  4401 University Drive, Lethbridge, AB T1K 3M4
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  Phone: (+1) 403 329 2689
  email: saurya.das@uleth.ca

- **Professor Alejandro Corichi**
  Centro de Ciencias Matemáticas, UNAM, Campus Morelia
  Apartado Postal 61-3 (Xangari), C.P. 58089
  Morelia, Michoacán
  Mexico
  Phone: (+52) 443 322 2769
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