Curriculum Vitae of Gil Bor

Date and place of birth: October 16, 1957, Israel.

Citizenships: Israel and Mexico (since 2005).

Contact:

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Education:

- 1983, B.Sc: Mathematics and Physics, Hebrew Univ, Jerusalem, Israel.
- 1985, M.Sc: Mathematics, Hebrew Univ, Jerusalem, Israel. Thesis: *Cross-ratios on flag manifolds*. Advisor: Prof. H. Furstenberg.
- 1991, Ph.D, Mathematics, UC Berkeley, USA. Thesis: *Non self-dual Yang-Mills Fields*. Advisor: Prof. J. Marsden.

Mathematical specialization: Differential geometry and mathematical physics.

Appointments

- 1983-85: Teaching assistant, Math. dept. of the Hebrew Univ. in Jerusalem, Israel.

- 1985-91: Teaching and research assistant, Math. dept. of UC Berkeley, USA.

- 1991-1994: associate professor (post-doctoral position), Math dept. of the Univ. of Arizona in Tucson, USA.

- 1994-present: math professor in the CIMAT (Centro de Investigación en Matemáticas), Guanajuato, Mexico.

Publications

*(Articles marked with * are in Q1 journals.)*

Research - published

1. *SO(3)-invariant Yang-Mills fields which are not self-dual* (with R Montegomery)
   In: Harnad, J., Marsden, J.E. (eds.), Hamiltonian systems, transformation groups, and spectral transform methods. Proceedings, Montreal, 1989. Montréal: Les publications CRM 1990.

2.* *Yang-Mills Fields which are not Self-Dual*
   Commun. Math. Phys. **145** (1992), 393–410. DOI

3.* *Symmetric Instantons and the ADHM Construction* (with J Segert)
   Commun. Math. Phys. **183** (1997), 183–203. DOI

4. *The canonical bundle of an hermitian manifold* (with L Hernández)
   Bol. Soc. Mat. Mexicana **5.1** (1999), 187–198.

5. *Bochner formulae for orthogonal G-structures on compact manifolds* (with L Hernández)
   Diff. Geom. Appl. **15** (2001), 265–286. DOI

6. *Bochner formula for almost-quaternionic-Hermitian structures* (with L Hernández)
   Diff. Geom. Appl. **21.1** (2004), 79–92. DOI

7. *Orthogonal almost complex structures of minimal energy* (with L Hernández, M Salvai)
   Geom. Dedicata **127.1** (2007), 75–85. DOI

8. G_2 *and the rolling distribution* (with R Montgomery).
   L'Enseignement Mathematique **55** (2009), 157–196. DOI

9.* *The dancing metric, G_2-symmetry and projective rolling* (with L. Hernandez Lamoneda, P. Nurowski).
   Trans. Amer. Math. Soc. **370.6** (2018), 4433–4481. PDF | DOI

10. *Testing the Domino Theory of Gene Loss in Buchnera aphidicola: The Relevance of Epistatic Interactions* (with D. Martínez-Cano, A. Moya, L. Delaye).
    Life **8.2** (2018), 17. PDF | DOI

11.* *Tire track geometry and integrable curve evolution* (with M. Levi, R. Perline, S. Tabachnikov).
    Int. Math. Res. Not. **2020.9** (2020), 2698–2768. PDF | DOI

12.* *Hill's equation, tire tracks and rolling cones* (with M. Levi).
    Nonlinearity **33.4** (2020), 1424–1442. PDF | DOI

13.* *On the isometric conjecture of Banach* (with L. Hernandez, V. Jimenez, L. Montejano).
    Geom. Topol. **25.5** (2021), 2621–2642. PDF | DOI

14.* *Bicycle paths, elasticae and sub-Riemannian geometry* (with A. Ardentov, E. Le Donne, R. Montgomery, Yu. Sachkov).
    Nonlinearity **34.7** (2021), 4661–4683. PDF | DOI

15.* *Left-invariant CR structures on 3-dimensional Lie groups* (with H. Jacobowitz).
    Complex Anal. Synerg. **7**, 23 (2021). PDF | DOI

16. *Variations on the Tait-Kneser theorem* (with C. Jackman, S. Tabachnikov).
    Math. Intelligencer **43** (2021), 8–14. PDF | DOI

17. *Para-Kahler-Einstein 4-manifolds and non-integrable twistor distributions* (with O. Makhmali, P. Nurowski).
    Geometriae Dedicata **216.9** (2022). PDF | DOI

18. *Self-Backlund curves in centroaffine geometry and Lamé's equation* (with M. Bialy, S. Tabachnikov).
    Comm. AMS **2** (2022), 232–282. PDF | DOI

19. *Revisiting Kepler: new symmetries of an old problem* (with C. Jackman).
    Arnold J. of Math. **9** (2023), 267–299. PDF | DOI

20. *On cusps of caustics by reflection: a billiard variation on Jacobi's Last Geometric Statement* (with S. Tabachnikov).
    Am. Math. Monthly, **130.5** (2023), 454–467. PDF | DOI

21.* *Bicycling geodesics are Kirchhoff rods* (with C. Jackman and S. Tabachnikov).
Nonlinearity **36** (2023), 3572–3602. PDF | DOI

22. *Dancing polygons, rolling balls and the Cartan-Engel distribution* (with L Hernández)
New York J. Math. **29** (2023), 981–1015.

23.* *Chains of path geometries on surfaces: theory and examples* (with T Willse)
Israel J Math, TBD (2024), 1–39

Research – submitted

24. *Cusps of caustics by reflection in ellipses* (with M Spivakovsky and S Tabachnikov)
Arxive preprint (2024)

Expository

25. *Poincaré y el problema de N-cuerpo* (with R. Montgomery)
Miscelanea Matemática, **58** (2014), 83–102. PDF

26. *La geometría de trayectorias de bicicletas* (with S. Tabachnikov). Ciencias, **135** (2020). PDF

Invited research talks (since 2014):

1. *The dancing metric, rolling of the projective plane on its dual and G_2 symmetry*
Geometry seminar, Univ of the Republic, Montevideo, Uruguay. Apr 2014.

2. *The dancing metric, rolling of the projective plane on its dual and G_2 symmetry*
Vector Distributions and Related Geometries, Banach Center, Warsaw, Poland, June 2-6, 2014.

3. *Rolling of projective planes with G_2-symmetry*
Equivalence, invariants, and symmetries of vector distributions and related structures : from Cartan to Tanaka and beyond, Institut Henri Poincare, Paris, France, December 10-12, 2014.
Abstract

4. *Rolling of projective planes with G_2-symmetry*
Integrability in Mechanics and Geometry, ICERM, Brown Univ, USA, Jun 1-5, 2015.

5. *The dancing metric, rolling of the projective plane on its dual and G_2 symmetry*
Joint meeting of the Israeli and Mexican math societies: Oaxaca, Mexico, Sept 7-11, 2015.

6. *Projective rolling, the dancing metric and G_2 symmetry*
Math Dept Colloquium, Penn State Univ, State College, USA. Nov 2015.

7. *Bicycle mathematics in 3D*
Integrability and Near-Integrability in Mechanics and Geometry, Banff Oaxaca, Mexico, June 12-17, 2016.
Video

8. *Bicycling mathematics in 2 and 3 dimensions*
Workshop on graded algebra, geometry and related topics, Mérida, Mexico, November 15-18, 2016.

9. *The geometry of bike trajectories*
The Math Club (a student seminar), Technion, Haifa, Israel, Apr 26, 2017.

10. *Number theory, dynamical systems and Benford's law*
    MASS Colloquium, Penn State Math Dept, State College, USA. Oct 22, 2017.

11. *A path geometry in 2D*
    Symmetry and Geometric Structures, The Banach Centre, Warsaw, Poland, Nov 12-18, 2017.
    Abstract

12. *Geometria de Trayectorias de Bicicleta*
    Plenary speaker, Annual meeting of the Mexican Math Society, Villahermosa, Tabasco, Mexico, Oct 2018.
    Abstract | Video

13. *El grupo $SL(2, \mathbf{R})$ en geometría*
    Lie groups seminar, CIMAT, Guanajuato, March 21, 2019.

14. *Kepler's problem: new symmetries of an old problem*
    Math colloquium, UNAM, Morelia, Mexico. Aug 9, 2019.

15. *La geometría de las trayectorias de Kepler-Newton* (3 talks)
    1era Escuela Nacional de Geometría Diferencial, CIMAT, Guanajuato. Nov 4-8, 2019.
    Abstract

16. *The geometry of orbits of the Kepler problem*
    12th Americas Conference on DE & Nonlinear Analysis, CIMAT, Guanajuato, Mexico. Dic 10, 2019.

17. *Solving linear Hamilonian ODE's by rolling cones in Minkowski's space*
    Math Colloquium, Univ of Arizona, Tucson, US. May 7, 2020.

18. *Orbital symmetries and projective geometry of the Kepler problem*
    AMS Sectional Meeting, Penn State, US, Oct 3, 2020.

19. *Geometry and new symmetries of the Kepler problem*
    Differential Geometry, Billiards, and Geometric Optics, CIRM, Luminy, France. Oct 4-8, 2021.
    Abstract | Video

20. *Paradoxes*
    Student Seminar, Penn State Univ Math, State College, USA. Feb 11, 2021.

21. *Cusps of caustics by reflection in a convex billiard table*
    Math Colloquium, UC Santa Cruz, USA. Jan 27, 2021.

22. *Bicycle Paths, Elasticae and Sub-Riemmannian Geometry*
    Analysis seminar, CIMAT, Mexico. May 12, 2022.

23. *Cusps of caustics by reflection in a convex billiard table*
    Topology & Geometry seminar, Haifa Univ, Israel. June 12, 2022.

24. *Dancing pairs, rolling balls and the Cartan distribution*
    Finite dimensional integrable systems, Tel Aviv Univ, Israel, June 20-24, 2022.
    Video

25. *Dancing pairs, rolling balls and the Cartan distribution*
    Geometry Seminar, Vienna Univ of Technology, Austria. Sept 15, 2022.

26. *Bicycling geodesics in 3D are Kirchhoff rods*
    Finite dimensional integrable systems, Anwerp, Belgium, Aug 7-11, 2023.

27. *Cusps of caustics by reflection in a convex billiard table.*
    Geometry seminar, Observatory of Paris, France, Aug 17, 2023.

28. *Cusps of caustics by reflection in a convex billiard table.*
    Complex Geometry seminar, IMT, Touolouse, France. Sept 14, 2023.

29. *Bicycle tracks, their monodromy invariants and geodesics.*
    Institute Coloquium, IMT, Touolouse, France. Sept 29, 2023.

30. *Cusps of caustics by reflection in a convex billiard table.*
    Geometry seminar, Center for Complex Geometry, Daejeon, S Korea. Oct 16, 2023.

31. *Bicycle tracks, their monodromy invariants and geodesics.*
    Geometry seminar, Center for Complex Geometry, Daejeon, S Korea. Oct 16, 2023.

32. *The Kepler problem - new symmetries via projective geometry.*
    Workshop on Parabolic Geometry and Related Topics, Daejeon, S Korea. Oct 17-20, 2023.

33. *The Kepler problem - new symmetries of an old problem.*
    Dynamical systems seminar, IMT, Touolouse, France. Nov 12, 2023.

34. *Cúspides de cáusticas por reflexión.*
    Mini-meeting of differential geometry, CIMAT, Guanajuato, Mexico. Dec 4, 2023.

35. *Dancing pairs, rolling balls and the Cartan-Engel distribution.*
    GRIEG meeting on Cartan Geometries, Laboratoire de Mathematique d'Orsay Universitè Paris-Saclay, France. March 4-9, 2024.

36. *Cusps of caustics by reflection in ellipses.*
    Lie groups, geometry, integrability, hydrodynamics, Sophus Lie Conference Center, Nordfjordeid, Norway. July 1-5, 2024.

Teaching: Graduate courses

Note: all graduate courses were given at the CIMAT

1. Mecánica Clásica, ago-dic 1994.

2. Topología I, agto-dic 1995

3. Topología I, agto-dic 1996

4. Topología II, ene-jun 1997

5. Geometría Riemanniana, ene-jun 1998

6. Variable Compleja I, ene-jun 1999

7. Teoría de Representaciones, ene-jun 2001

8. Grupos de Lie, agsto-dic 2007

9. Teoría de Representaciones, ene-jun 2008

10. Mini-curso de introducción a grupos de Lie, 6-8 dic, 2010

11. Teoría de Morse, ago-dic, 2012

12. Topología de variedades diferenciales, ene-jun, 2013

13. Teoría de Representaciones, ago-dic 2013
14. Fibrados, conexiones y clases características, ene-jun 2014.
15. Álgebra Moderna (Galois Theory), ago-dic 2019.
16. Teoría de representaciones de grupos de Lie, ene-jun 2020.
17. Differential geometry of plane curves – Selected topics, March-April 2024.

Teaching: undergraduate courses

Note: all undergraduate courses, unless otherwise noted, were given in the Math dept of the Univ of Guanajuato.

1. Mecánica Clásica, Escuela de verano, CIMAT, jul 1999
2. Álgebra Superior, ago-dic 1999
3. Seminario de Problemas e Investigacion, ene-jul 2000
4. Mecánica Clásica, ago-dic 2000
5. Probabilidad y Estadística, Depto de Física, UG, ene-abr 2001
6. Mecánica Clásica, escuela de verano, ago 2001
7. Teoría de números, ago-dic 2001
8. Teoría de conjuntos y lógica matemática, ago-dic 2002
9. Álgebra lineal 1, ene-mayo 2003
10. Álgebra lineal 1, ago-dic 2003
11. Álgebra lineal 2, ene-mayo 2004
12. Teoría de números, Taller de Cálculo, CIMAT, jul 2005
13. Cálculo 3, ago-dic 2005
14. Cálculo 4, feb-jun 2006
15. Teoría de números, Taller de Cálculo, CIMAT, jul 2006
16. Cálculo 3, ago-dic 2006
17. Cálculo 4, feb-jun 2007
18. Matemáticas elementales y elementos de geometría, ago-dic 2008
19. Álgebra lineal 1, ene-mayo 2009
20. Álgebra lineal 2, ago-dic 2009

21. Matemáticas elementales y elementos de geometría, ene-jun 2010

22. Álgebra moderna 2, ago-dic 2010

23. Álgebra lineal 1, ene-mayo 2011

24. Cálculo 3, ago-dic 2011

25. Cálculo 3, ago-dic 2014

26. Geometría de curvas, Congreso nacional de la SMM, oct 2014

27. Matemáticas elementales, ago-dic 2017

28. Topología diferencial, ago-dic 2020

29. Elementos de geometría, ago-dic 2021

30. Geometría diferencial de curvas en el plano, Escuela temática de Topología y Geometría, CIMAT, 5-9 jun 2023

Outreach (high/middle/primary school) – Summary

- Organization of activities (8 items)
- Talks, workshops, mini-courses (24 items)
- Semester long courses (26 items)

Outreach: Organization of activities

1. Math workshops for middle school (secundaria) students, 1997.
   Guanajuato │Dolores Hidalgo .

2. Taller de Ciencia para Jóvenes, 1997 – present
   Science workshops for high school students that I started in CIMAT in summer 1997, which were then extended to many other institutes in Mexico (approx 10). I have given over the years numerous courses and lectures in this program in many institutes in Mexico. Here is a list of institutes I collaborated with to establish these workshops (not all keep a website):

   (a) INAOE, Puebla, since 2002.
   (b) UNAM-CICESE-UABC, Ensenda, BC., since 2003.
   (c) Taller ciencia viva, CINVESTAV-Irapuato, Gto., since 2003.
   (d) IRyA de la UNAM, Morelia, Mich.
   (e) CIMAT, Mérida, Yuc.
   (f) Centro de Geociencias, UNAM, Qto.
   (g) Dept de matemáticas, Univ de Guerrero, Acapulco, Guer.

    (h) Fac de Ciencias, Colima

    (i) Dept de Química, Univ de Guanajuato, Gto.

    (j) Ecosur, Campeche

    (k) Ecosur, San Cristobal de las Casas, Chiapas

    (l) Ecosur, Tapachula, Chiapas.

3. VIBA, 1997
A workshop for high school students from rural areas of the state of Guanajuato.

4. Proyecto Post-Primaria de CONAFE, 2000
Workshops for teachers of middle schools ("post-primaria") in rural areas of the state of Guanajuato.

5. Taller de Ciencia para niños de primaria, 2003 –
A science summer camp for primary school pupils that I helped start at CIMAT with Renato Iturriaga, then other people took over. It is still going, with other people from CIMAT organizing it.

6. Club de Ciencia para Jóvenes, 2004–2007
A science club I organized in the local highschool during 3 semesters (24 sessions)

7. Semana de la ciencia en Chiapas, 2006–2015
Summer science workshops for highschool students that I started in the state of Chiapas, Mexico, similar to the Taller de Cinecia para Jóvenes in Cimat. This was repeated every summer for 10 years. I have given courses in almost all the editions of this workshop.

8. Math classes in the CIMAT for high school students, 2011 – present
A program that I started in CIMAT for high school students interested in taking their regular math classes in CIMAT. I have given a course in this program almost every semestre since I started it.

Outreach: Talks, workshops, mini-courses

(Note: this is a partial list, I gave many more outreach talks over the years that I don't have record of, in the Mexican states of Guanajuato, Colima, Chiapas, Yucatan, Campeche, Baja California Norte, Querétaro, Nayarit, Puebla, Vera Cruz, Michoacan, Mexico City, as well as many talks in a week long visit to Cuba in April 2009)

1. *Teoría de números* (a mini-course of 5 sessions, 2 hrs each)
Taller de Ciencia para Jóvenes, CIMAT, 4-8 ago, 1997

2. *Teoría de números* (a mini-course of 5 sessions, 2 hrs each)
Taller de Ciencia para Jóvenes, CIMAT, 20 - 31 de julio, 1998

3. *Teoría de números* (a mini-course of 5 sessions, 2 hrs each)
La semana de la ciencia en Chiapas, San Cristóbal de las Casas, 26-30 junio, 2006

4. *Las matemáticas de pompas de jabón* (a mini-course of 5 sessions, 2 hrs each)
La semana de la ciencia en Chiapas, San Cristóbal de las Casas, 1-7 julio, 2007

5. *La ciencia de pompas de jabón* (a mini-course of 5 sessions, 2 hrs each)
La semana de la ciencia en Chiapas, San Cristóbal de las Casas, 6-12 julio, 2008

6. *La relación de la matemática y la biología* (1.5 hr talk, joint with Yuri Peña)
La semana de la ciencia en Chiapas, San Cristóbal de las Casas, 6-12 julio, 2008

7. *Teoría de números* (a mini-course of 5 sessions, 2 hrs each)
La semana de la ciencia en Chiapas, San Cristóbal de las Casas, 2-8 agosto, 2009

8. *Geometría e imaginación* (a mini-course of 5 sessions of 2 hrs each)
Taller de Ciencia para Jóvenes, CIMAT, 19 - 25 julio, 2009

9. *Teoría de Códigos* (1 hr talk)
Taller de Ciencia para Jóvenes, CIMAT, 17-23 jul, 2011

10. *Geometría e imaginación* (a mini-course of 5 sessions of 2 hrs each, see material)
Taller de Ciencia para Jóvenes, San Cristóbal de las Casas, 25-30 jul, 2011

11. *Geometría e imaginación* (a mini-course of 5 sessions of 2 hrs each)
Taller de Ciencia para Jóvenes, San Cristóbal de las Casas, 6-10 agosto, 2012

12. *Matemáticas y paradójas* (1 hr talk)
Taller de Ciencia para Jóvenes, CIMAT, 15-20 jul, 2013

13. *Geometría e imaginación* (a mini-course of 5 sessions of 2 hrs each)
Taller de Ciencia para Jóvenes, Ecosur – Campeche, 28 jul - 2 ago , 2013

14. *Matemáticas y paradójas* (1 hr talk)
Taller de Ciencia para Jóvenes, CIMAT, 21-26 julio, 2014

15. *Paradójas y Topología* (a mini-course of 5 sessions of 2 hrs each)
Taller de Ciencia para Jóvenes, Ecosur – Campeche, 28 jul - 1 ago , 2014

16. *Geometría e imaginación* (a mini-course of 5 sessions of 2 hrs each)
Taller de Ciencia para Jóvenes, CIMAT, 27 jul - 1 ago, 2015

17. *Matemáticas y paradójas* (1 hr talk)
Taller de Ciencia para Jóvenes, CIMAT, 27 jul - 1 ago, 2015

18. *The Mathematics of internet search*
Student Math Colloquium (MASS), Penn State Univ, State College, USA. Nov 2015.

19. *Criptología* (a 3 hr workshop)
Taller de Ciencia para Jóvenes, CIMAT, 25-31 jul , 2016

20. *Juegos matemáticos* (a 3 hr workshop)
Taller de Ciencia para Jóvenes, CIMAT, 16-23 julio, 2017

21. *Juegos matemáticos* (2 sessions of 2 hrs each)
Taller de Ciencia para Profes, Ecosur – Campeche, 18-21 ene, 2018

22. *Geometría e imaginación* (a mini-course of 5 sessions of 2 hrs each)
Taller de Ciencia para Jóvenes, CIMAT, 22-29 julio, 2018

23. *Juegos matemáticos* (a 3 hr workshop)
    Taller de Ciencia para Jóvenes, CIMAT, 22-29 julio, 2018

24. *Redes eléctricas* (a 3 hr workshop, joint with H Chang)
    Taller de Ciencia para Jóvenes, CIMAT, 21-28 julio, 2019

25. *Juegos matemáticos* (2 sessions of 2 hrs each)
    Taller de Ciencia para Profes, Ecosur – Campeche, 16-19 ene, 2020

26. *Paradójas* (1 hr talk)
    Taller de Ciencia para Jóvenes, CIMAT, 11-18 dic, 2022

27. *Taller de juegos matemáticos* (3 hrs workshop)
    Taller de Ciencia para Jóvenes, CIMAT, 21-28 jul, 2024

Outreach: Semester long courses (mostly highschool)

1. Fisica 3, preparatoria oficial de la UG, ene-mayo 2005
   An ordinary physics class in a local high-school

2. *Pensamiento matemático para amantes de las matemáticas*, feb-jun 2009
   For middle school students

3. *Otra cara de las matemáticas*, mar-jun 2011
   For high school students

4. Matemáticas 5 en el CIMAT, ago-dic 2011.
   Highschool (5th semestre)

5. *Teoría de códigos*, may-jun, 2011 (4 sessions)
   For high-school/undergraduate students

6. Cálculo en el CIMAT, ene-jun 2012
   Highschool (6th semestre)

7. Cálculo en el CIMAT, ago-dic 2012
   Highschool (5th semestre)

8. Cálculo integral , ene-jun 2013
   Highschool (6th semestre)

9. Álgebra I, ago-dic 2013
   Highschool (1st semestre)

10. Álgebra II, ene-jun 2014
    Highschool (2nd semestre)

11. Álgebra I, ago-dic 2014
    Highschool (1st semestre)

12. Álgebra II, ene-jun 2015
    Highschool (2nd semestre)

13. Álgebra I, ago-dic 2015
    Highschool (1st semestre)

14. Álgebra II, ene-jun 2016
    Highschool (1st semestre)

15. Informática aplicada II, ene-jun 2016
    Highschool (6th semestre)

16. Geometría y trigonometría, ago-dic 2016
    Highschool (3rd semestre)

17. Geometría analítica, ene-jun 2017
    Highschool (4th semestre)

18. Geometría y trigonometría, ago-dic 2017
    Highschool (3rd semestre)

19. Geometría analítica, ene-jun 2018
    Highschool (4th semestre)

20. Álgebra I, ago-dic 2018
    Highschool (1st semestre)

21. Álgebra II, ene-jun 2019
    Highschool (2nd semestre)

22. Álgebra I, ago-dic 2019
    Highschool (1st semestre)

23. Álgebra II, ene-jun 2020
    Highschool (2nd semestre)

24. Álgebra I, ago-dic 2020
    Highschool (1st semestre)

25. Álgebra I, ago-dic 2022
    Highschool (1st semestre)

26. Álgebra II, ene-jun 2023
    Highschool (2nd semestre)

Thesis students:

- Undergraduate: Homero Gallegos, *Galois theory and Riemann surfaces*. Graduated 2007.

- M.A: Roger Fernando Tun , *Spherical harmonics*. Graduated 2022, currently a PhD student in Cimat.

- Ph.D: Richard Muñiz Manasliski, *Yang-Mills instantons with symmetry*. Graduated 2006, currently a tenured math professor in the Universidad de la República, Uruguay.

Service:

- Review committee for study plans of the math and computer science undergraduate programs of the University of Guanajuato (2000).

- Judge in the Mexican National Math Olympiad (1999, 2001).

- Geometry seminar coordinator in the CIMAT, 2009-2010, 2019-2022.

- Colloquium coordinator in the CIMAT, 2010-2012.

- Graduate admissions committee in the CIMAT, 2014.

- Organization of an international math conferences:

    - Sub-Riemannian Geometry and Celestial Mechanics, CIMAT, 2016.
    - VIII Conference on Finite Dimensional Integrable Systems in Geometry and Mathematical Physics (FDIS), CIMAT, August 4-8, 2025, Guanajuato, Mexico

- Coordination of the program "Taller de Ciencia para Jóvenes" (summer program for highschool students), 1997-present.

- Coordination of the program "Math Courses in CIMAT for Highschool Students", 2011-present.

- Departmental commitee (mosty hiring and promotions), CIMAT, 2020 - present.

- Referee: Nonlinearity, Arnold Math J, Sigma, European J of Math, The American Math Monthly, Math Intelligencer, NY Journal of Math, Bulletin of the Mexican Math Society.

- Journal Editor: Reviews of The Association for Mathematical Research, Arnold Math J.

Updated: August 11, 2024.