

# HAYDEÉ CONTRERAS PERUYERO

Postdoctoral fellowship at Center of Sciences Mathematics - UNAM |  
Topological and Geometric Data Analysis | Bioinformatics | Geometric Group  
Theory | Global Riemannian Geometry | Quantum Geometry and Topology



## EDUCATION

2021  
|  
2016

### Ph. D. in Science in Mathematics

Instituto de Matemáticas, UNAM

Mexico City, Mexico

- Dr. Pablo Suárez Serrato
- Thesis: Rigidez Cuasi-Isométrica en Variedades de Gráficas Superiores

2021  
|  
2020

### Specialty in Applied Statistics

Instituto de Investigaciones en Matemáticas Aplicadas y en  
Sistemas

Mexico City, Mexico

- Grade: 9.25/10.

2016  
|  
2014

### Master of Science in Mathematics

Instituto de Matemáticas, UNAM

Mexico City, Mexico

- Dr. Pablo Suárez Serrato
- Thesis: Sobre la geometría y la topología de las variedades de gráficas
- Grade: 9.67/10.

2012  
|  
2007

### Bachelor's Degree in Mathematics

Universidad Veracruzana

Veracruz, Mexico

- Dr. Jorge Luis López López
- Thesis: Triangulaciones de 3-variedades hiperbólicas que fibran sobre el círculo con fibra el toro con un agujero
- Grade: 9.4/10.



## APPOINTMENTS

current  
|  
2024

### Postdoctoral research DGAPA UNAM 2024

Centro de Ciencias Matemáticas, UNAM

Michoacan, Mexico

- Dr. Daniel Juan Pineda, Dra. Nelly Sélem Mojica, Dr. Jesús Hernández Hernández
- Aplicaciones de análisis topológico de datos e invariantes de cuasi-isometrías

Made with the R package  
[pagedown](#).

The source code is available at  
[HaydeePeruyero/CV](#) and is powered  
by [nstrayer/cv](#).

Last updated on 2024-07-27.

2024

### 2024 Summer Collaborators IAS

Institute of Advances Studies

📍 Princeton, USA

- Catherine Searle, Megan Kerr, Regina Rotman, Erin Griffin, Isabel Beach
- Existence Criteria for Compact Homogeneous Einstein Metrics

2024  
|  
2023

### Postdoctoral research DGAPA UNAM 2023

Centro de Ciencias Matemáticas, UNAM

📍 Michoacan, Mexico

- Dr. Daniel Juan Pineda, Dra. Nelly Sélem Mojica, Dr. Jesús Hernández Hernández
- TDA y Machine learning aplicado a Metagenómica e invariantes de Variedades de Gráficas

2023  
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2022

### Postdoctoral research CONACyT Ciencia de Frontera 217392

Centro de Ciencias Matemáticas, UNAM

📍 Michoacan, Mexico

- Dr. Jesús Hernández Hernández
- Propiedades invariantes de Variedades de Gráficas Superiores

2022  
|  
2021

### Head of the Department of Basic Sciences

Instituto Tecnológico de Martínez de la Torre

📍 Veracruz, Mexico



## PUBLICATIONS

2024

### Actinobacteria bioprospecting from ore-forming environments

- Aguilar, C., Alwali, A., Mair, M., Rodriguez-Orduña, L., Contreras-Peruyero, H., Modi, R., Sélem-Mojica, N., Licona-Cassani, C. & Parkinson, E. I. Actinomycetota bioprospecting from ore-forming environments. *Microbial Genomics*, 10(5), 001253. ISSN 2057-5858, <https://doi.org/10.1099/mgen.0.001253>

2024

### Physicochemical Properties of Two Mexican Stingless Bee Honeys to Strengthen Their Biocultural Value

- Xolalpa-Aroche, A., Hernández-Mena, D. I., Moguel-Chin, W. I., Contreras-Peruyero, H., Rivero-Cruz, B. E., Ortiz-Vázquez, E., & Delgado-Suárez, E. J. (2024). Physicochemical Properties of Two Mexican Stingless Bee Honeys to Strengthen Their Biocultural Value. *Revista Brasileira de Farmacognosia*, 1-11. <https://doi.org/10.1007/s43450-024-00566-z>

2022

### Collapsing and group growth as obstructions to Einstein metrics on some smooth 4-manifolds

- Contreras Peruyero, H. Suárez-Serrato, P. Collapsing and group growth as obstructions to Einstein metrics on some smooth 4-manifolds. *New York Journal of Mathematics* 28 (2022), 659–671. <http://nyjm.albany.edu/j/2022/28-27.html>



## PREPRINTS

### **Asymptotic dimension and geometric decompositions in dimensions 3 and 4**

- H. Contreras Peruyero and P. Suárez-Serrato. <https://arxiv.org/abs/2401.02560>. Submitted January 2024

2024

### **Multidisciplinary Workshop on Pangenomics and Topological Data Analysis**

- H. Contreras Peruyero, S. Guerrero-Flores, C. Zirián-Martínez, P. M. Mejía-Ponce, Marisol Navarro-Miranda, J. Abel Lovaco-Flores, J.M. Ibarra-Rodríguez, A. Pashkov, C. Licona-Cassani and N. Sélem-Mojica. Submitted January 2024

2024

### **CAMDA 2023: finding patterns in urban microbiomes**

- Haydeé Contreras-Peruyero , Imanol Nuñez-Morales , Mirna Vázquez-Rosas-Landa , Daniel Santana-Quinteros , Antón Pashkov , Mario E. Carranza-Barragán , Rafael Perez-Estrada , Shaday Guerrero-Flores , Eugenio Balanzario , Victor Muñiz-Sánchez , Miguel Nakamura-Savoy , Leticia L. Ramírez-Ramírez and Nelly Selem-Mojica. Submitted June 2024

2024

### **Topological data analysis captures Horizontal Gene Transfer in Antimicrobial Resistance gene families among clinically relevant bacteria**

- Shaday Guerrero-Flores , Haydeé Contreras-Peruyero, Jose Ibarra , Jose Abel Lovaco-Flores , Francisco Nieto , Fernando Fontove-Herrera and Nelly Selem-Mojica. Submitted July 2024

2022

### **On the quasi-isometric rigidity of chambers and walls in cusp-decomposable manifolds**

- H. Contreras Peruyero. <https://arxiv.org/abs/2010.03736> Submitted 2022



## TEACHING EXPERIENCE

2024

### Scientific Computing: Scientific computing for data analysis

Centro de Ciencias Matemáticas, UNAM

📍 Michoacan, Mexico

- Graduate Course
- [https://haydeeperuyero.github.io/Computo\\_Cientifico/](https://haydeeperuyero.github.io/Computo_Cientifico/)

2024

### Web pages with Rmarkdown and Github

Centro de Ciencias Matematicas (CCM), UNAM

📍 Morelia, Mexico

- Encuentro de R-Ladies Morelia y R-Ladies Querétaro
- <https://r-ladies-morelia.github.io/project/webpage/>

2024

### Data analysis - PYTHON, BASH Y GIT

Centro de Ciencias Matematicas (CCM), UNAM

📍 Morelia, Mexico

- Instructors: Haydeé Peruyero(Git), Shaday Guerrero (Bash), Miguel Magaña(Python)
- <https://miguel-mx.github.io/2024-01-24-ccm-unam-swc/>
- Software Carpentry

2023

### Topology advanced course: Applications of Topological Data Analysis

Centro de Ciencias Matemáticas, UNAM

📍 Michoacan, Mexico

- Graduate Course
- [https://github.com/HaydeePeruyero/CursoA\\_Aplicaciones\\_TDA](https://github.com/HaydeePeruyero/CursoA_Aplicaciones_TDA)

2023

### Statistics seminar: Data Analysis with R

Centro de Ciencias Matemáticas, UNAM

📍 Michoacan, Mexico

- Graduate Course
- [https://haydeeperuyero.github.io/Seminario\\_Estadistica/](https://haydeeperuyero.github.io/Seminario_Estadistica/)

2023

### Advanced Algebra Course: Group Actions on Trees

Centro de Ciencias Matemáticas, UNAM

📍 Michoacan, Mexico

- Graduate Course

2023

### Presentations with Markdown: Xaringan and Quarto revealjs

Centro de Ciencias Matematicas (CCM), UNAM

📍 Virtual event

- R-ladies Morelia
- [https://r-ladies-morelia.github.io/Xaringan\\_RLadies2023/](https://r-ladies-morelia.github.io/Xaringan_RLadies2023/)

2022

### Teaching Assistant, Advanced Geometry Course: Hyperbolic Geometry

Centro de Ciencias Matemáticas, UNAM

📍 Michoacan, Mexico

- Graduate Course

2022	<b>dplyr y Rmarkdown con Latex</b> Centro de Ciencias Matematicas (CCM), UNAM • R-ladies Morelia	📍 Virtual event
2022	<b>R for Reproducible Scientific Analysis</b> Centro de Ciencias Matematicas (CCM), UNAM • Helper for R-ladies Morelia	📍 Virtual event
2021	<b>Teaching Assistant, Analytic Geometry II</b> Facultad de Ciencias, UNAM • Professor José Crispín Ruíz Pantaleón • <a href="https://github.com/appliedgeometry/Geometria-Analitica">https://github.com/appliedgeometry/Geometria-Analitica</a>	📍 Mexico City, Mexico
2020	<b>Teaching Assistant, Analytic Geometry II</b> Facultad de Ciencias, UNAM • Professor José Crispín Ruíz Pantaleón • <a href="https://github.com/appliedgeometry/Geometria-Analitica">https://github.com/appliedgeometry/Geometria-Analitica</a>	📍 Mexico City, Mexico
2020	<b>Teaching Assistant, Differential and Integral Calculus II</b> Facultad de Ciencias, UNAM • Professor Oscar A. Garrido and Arturo Sánchez	📍 Mexico City, Mexico
2020	<b>Teaching Assistant, Analytic Geometry II</b> Facultad de Ciencias, UNAM • Professor Pablo Suárez Serrato • <a href="https://github.com/appliedgeometry/Geometria-Analitica">https://github.com/appliedgeometry/Geometria-Analitica</a>	📍 Mexico City, Mexico
2019	<b>Teaching Assistant, Analytic Geometry I</b> Facultad de Ciencias, UNAM • Professor Pablo Suárez Serrato • <a href="https://github.com/appliedgeometry/Geometria-Analitica">https://github.com/appliedgeometry/Geometria-Analitica</a>	📍 Mexico City, Mexico
2014   2012	<b>Mathematics and Physics High School teacher</b> Instituto Motolinia	📍 Veracruz, Mexico

## 螗 AND POSTERS

2024	<b>Escuela de Matemáticas de América Latina y el Caribe Cuernavaca</b> <b>2024</b> Talk • Analizando datos con topología y geometría • Co-authors: Shaday Guerrero-Flores, Nelly Sélem-Mojica. IMATE Cuernavaca • June 18th	📍 Morelos, Mexico
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2024

### Degustaciones Matemáticas

Talk

📍 Michoacan, Mexico

- TDA detecta la transferencia horizontal de genes
- Co-authors: Shaday Guerrero-Flores, Nelly Sélem-Mojica. UMSNH
- February

2024

### 2024 Joint Mathematics Meetings

Talk

📍 San Francisco, USA

- Asymptotic dimension and geometric decompositions in dimension 4
- Co-authors: Pablo Suárez-Serrato

2023

### XXIV Escuela de Otoño (EOBM) y el XVII Encuentro Nacional (ENBM), of Bio-mathematics

Minicourse

📍 Veracruz, Mexico

- Aplicaciones de análisis topológico de datos a Pangenómica
- October 9 - 14

2023

### Taller Propedéutico de Ingreso al PCCM 2023

Talk

📍 Michoacan, Mexico

- Algunas aplicaciones relacionadas al análisis topológico de datos y aprendizaje geométrico profundo
- October 9th

2023

### Iberoamerican and Pan Pacific International Conference on Topology and its Applications

Talk

📍 Puebla, Mexico

- Invariants under quasi-isometries
- September 11 - 14

2023

### 31st Conference on Intelligent Systems for Molecular Biology and 22th European Conference On Computational Biology as part of the Annual International Conference on Critical Assessment of Massive Data Analysis

Poster

📍 Lyon, France

- Topology, regression and metapangenome enrich conventional microbiome analyses
- July 24 - 27

2023

### Workshop Técnicas Modernas en Geometría Riemanniana 2023

Talk

📍 Mexico City, Mexico

- Algunos invariantes de cuasi-isometrías
- IMATE, UNAM
- July 24 - 27

2023

### Décima Jornada de Geometría, Topología y Dinámica

Talk

📍 Michoacan, Mexico

- Algunos problemas relacionados al análisis topológico de datos y aprendizaje geométrico
- CCM, UNAM
- June 16th

2023

### 2023 Midwest Geometry Conference

Talk

📍 Kansas, USA

- Higher graph manifolds, properties and invariants
- March

2023

### 2023 Joint Mathematics Meetings

Talk

📍 Boston, USA

- Collapsing and group growth as an obstruction to Einstein metrics on some smooth 4-manifolds
- January

2022

### Seminario FISMAT

Talk

📍 Michoacan, Mexico

- Algunos problemas relacionados al análisis topológico de datos y aprendizaje geométrico
- Facultad de Ciencias Físico Matemáticas de la Universidad Michoacana de San Nicolás de Hidalgo
- November 15th

2022

### 8th Mexican Workshop on Applied Geometry and Topology

Poster

📍 Virtual

- Topological data analysis applied to metagenomics and pangenomics data of Clavibacter
- Co-authors: Shaday Guerrero Flores (Centro de Ciencias Matemáticas-CIMAT), Nelly Selem Mojica (Centro de Ciencias Matemáticas), Noé Bárcenas Torres (Centro de Ciencias Matemáticas), Jesús Hernández Hernández (Centro de Ciencias matemáticas), Antonio Rieser (CIMAT)
- November 11th

2022

### 8th Mexican Workshop on Applied Geometry and Topology

Poster

📍 Virtual

- Topological and Geometric explorations of Autism fMRI connectomes
- Co-authors: Sebastian Pujalte Ojeda (Instituto de Fisiología Celular UNAM), Sophie Achard (Centre de recherche Inria Grenoble Rhône-Alpes), Pablo Suárez Serrato (Instituto de Matemáticas UNAM)
- November 10th

2022

**ISCB-Latin America SoIBio BioNetMX Conference on Bioinformatics**

**2022**

Poster

📍 Queretaro, Mexico

- Topological data analysis applied to metagenomics and pangenomics data of Clavibacter
- Co-authors: Shaday Guerrero Flores (Centro de Ciencias Matemáticas-CIMAT), Nelly Selem Mojica (Centro de Ciencias Matemáticas), Noé Bárcenas Torres (Centro de Ciencias Matemáticas), Jesús Hernández Hernández (Centro de Ciencias matemáticas), Antonio Rieser (CIMAT)
- November 3rd

2022

**55 Congreso Nacional de la Sociedad Matemática Mexicana**

Talk

📍 Guadalajara, Mexico

- Cuasi-isometrías e invariantes
- October 26th

2022

**Coloquio del Posgrado Conjunto de Ciencias Matemáticas**

Talk

📍 Michoacan, Mexico

- Variedades de Gráficas y Métricas de Einstein
- September 23th

2022

**Seminario Informal de Geometría del CCM**

Talk

📍 Michoacan, Mexico

- Cuasi-isometrías y “aplicaciones”
- September 22th

2022

**XXII Escuela de Verano en Matemáticas**

Talk

📍 Michoacan, Mexico

- Cuasi-Isometrías y algunos invariantes
- CCM, UNAM
- August 3rd

2022

**I Escuela de Teoría Geométrica de Grupos**

Talk

📍 Michoacan, Mexico

- ¿Qué significa crecimiento?
- CCM, UNAM
- July 28th

2022

**Seminario DIVAGEO**

Talk

📍 Virtual

- Variedades de gráficas, propiedades y métricas de Einstein
- Facultad de Ciencias, UNAM
- May

2022	<b>Seminario a distancia de Teoría Geométrica de Grupos</b>	 Virtual
	Talk	
	<ul style="list-style-type: none"><li>• Variedades de Gráficas de dimensiones superiores, propiedades e invariantes</li><li>• CCM, UNAM</li><li>• May 5h</li></ul>	
2021	<b>Tercer Encuentro de Mujeres Matemáticas Mexicanas</b>	 Virtual
	Talk	
	<ul style="list-style-type: none"><li>• Sobre Variedades de Gráficas</li><li>• November</li></ul>	
2021	<b>54 Congreso Nacional de la Sociedad Matemática Mexicana</b>	 Virtual
	Talk	
	<ul style="list-style-type: none"><li>• Sobre Variedades de Gráficas</li><li>• October</li></ul>	
2021	<b>Geometric Group Theory seminar in Cambridge</b>	 Virtual
	Talk	
	<ul style="list-style-type: none"><li>• About higher graph manifolds</li><li>• May</li></ul>	
2021	<b>Spring Eastern Sectional Meeting, Recent Developments in Differential Geometry, III,</b>	 Virtual
	Talk	
	<ul style="list-style-type: none"><li>• Quasi-isometric rigidity in cusp-decomposable manifolds</li><li>• March</li></ul>	
2021	<b>Sextas Jornadas de Geometría, Topología y Dinámica</b>	 Virtual
	Talk	
	<ul style="list-style-type: none"><li>• Sobre las variedades de gráficas de dimensiones superiores</li><li>• March</li></ul>	
2020	<b>Workshop and Winter School on Geometric and Topological Data Analysis</b>	 Guanajuato, Mexico
	Poster	
	<ul style="list-style-type: none"><li>• Topological gastronomy</li><li>• CIMAT</li><li>• January</li></ul>	
2019	<b>Seminar ATD and related topics in CIMAT</b>	 Guanajuato, Mexico
	Talk	
	<ul style="list-style-type: none"><li>• Topological gastronomy</li><li>• CIMAT</li><li>• November</li></ul>	

2019	<b>LII Congreso Nacional de la Sociedad Matemática Mexicana</b>	 Nuevo Leon, Monterrey
	Talk	
	<ul style="list-style-type: none"> <li>• Rigidez Casi-Isométrica en Variedades de Gráficas Superiores</li> <li>• October</li> </ul>	

  

2019	<b>Workshop Geometría Diferencial y Rigidez de espacios singulares</b>	 Michoacan, Mexico
	Talk	
	<ul style="list-style-type: none"> <li>• Rigidez Casi-Isométrica en Variedades de Gráficas Superiores</li> <li>• CCM, UNAM</li> <li>• June</li> </ul>	



## SCIENCE COMMUNICATION

current   2023	<b>Club Mate</b>	 Michoacan, Mexico
	Workshop	
	<ul style="list-style-type: none"> <li>• Participation in the mate club aimed at elementary and secondary school students</li> <li>• CCM UNAM</li> </ul>	
2024	<b>Feria Infantil y Juvenil de Ciencias y Artes</b>	 Michoacan, Mexico
	Workshop	
	<ul style="list-style-type: none"> <li>• Estereogramas</li> <li>• Instructors: Mariel Chaveste</li> <li>• May 25th</li> </ul>	
2024	<b>Feria de las Matemáticas</b>	 Michoacan, Mexico
	Workshop	
	<ul style="list-style-type: none"> <li>• Taller de Papiroflexia Modular</li> <li>• Instructors: Mariel Chaveste</li> <li>• March 16th</li> </ul>	
2024	<b>Feria de las Matemáticas</b>	 Michoacan, Mexico
	Talk	
	<ul style="list-style-type: none"> <li>• ¿Qué hacemos cuentas? Son puros cuentos</li> <li>• Co-authors: Cristina Villanueva, Yesenia Villicaña, Diana Piñango</li> <li>• March 16th</li> </ul>	
2023	<b>PI Day in the Instituto Tecnológico Superior de Martínez de la Torre</b>	 Veracruz, Mexico
	Talk	
	<ul style="list-style-type: none"> <li>• Algunas aplicaciones relacionadas al análisis topológico de datos y aprendizaje geométrico</li> <li>• ITSMT, Mtz. de la Torre.</li> <li>• March 14th</li> </ul>	

2023

### 11° Fiesta de las Ciencias y Humanidades

Workshop

📍 Michoacan, Mexico

- Lengua de Señas Mexicana (LSM) y Matemáticas
- UNAM Campus Morelia
- October 19th

2023

### 11° Fiesta de las Ciencias y Humanidades

Workshop

📍 Michoacan, Mexico

- Biomatemáticas
- UNAM Campus Morelia
- October 20th

2022

### 10° Fiesta de las Ciencias y Humanidades

Workshop

📍 Michoacan, Mexico

- Lengua de Señas Mexicana (LSM) y Matemáticas
- UNAM Campus Morelia
- October 27th - 28th



## COURSES

2023

### Taller Descarga y Análisis de Datos Digitales (Facebook)

📍 Virtual

- October 25th

2023

### 1st Advanced Scientific Programming in Python – Latin America

📍 Mexico City, Mexico

- Main instructors: Carlos Cernuda, Carlos Echeverría, Guillermo Aguilar, Jakob Jordan, Jenni Rinker, Lisa Schwetlick, Pietro Berkes, Rike-Benjamin Schuppner, Seetha Krishnan, Tiziano Zito, Zbigniew Jędrzejewski-Szmeek
- <https://latam.aspp.school/2023-mexico-city/start.html>
- June 26th - July 1st



## RESEARCH EXPERIENCE

2023

### Women in Geometry 3

BIRS in Banff

📍 Alberta, Canada

- Compact Homogeneous Einstein Manifolds
- Catherine Searle, Megan Kerr, Regina Rotman, Erin Griffin, Isabel Beach
- September 24 - 29

2023

### **Women in Computational Topology**

Bernoulli Center EPFL

📍 Lausanne, Switzerland

- Studying self-similarity of complex networks with persistent magnitude
- Nina Otter, Maria Antonietta Pascali, Sanjukta Krishnagopal, Rayna Andreeva, Elizabeth Thompson
- July 17 - July 21

2022

### **2022 Summer Research in Mathematics program**

BIRS in Banff

📍 Alberta, Canada

- Cohomogeneity Two Manifolds of Positive Sectional Curvature
- Catherine Searle, Megan Kerr, Regina Rotman, Hannah Alpert, Isabel Beach
- June 12 to June 25

2019

### **Scholarship Program for International Mobility for National CONACYT Fellows**

Department of Mathematics, The Ohio State University 📍 Ohio, USA

- Dr. Jean-François Lafont
- December 1-15

2019

### **Women in Geometry 2**

Casa Matemática Oaxaca BIRS

📍 Oaxaca, Mexico

- Cohomogeneity Two Manifolds of Positive Sectional Curvature
- Catherine Searle, Megan Kerr, Regina Rotman, Hannah Alpert, Isabel Beach
- June 23 to June 28

2018

### **Scholarship Program for International Mobility for National CONACYT Fellows**

Department of Mathematics, The Ohio State University 📍 Ohio, USA

- Dr. Jean-François Lafont
- April 30 to June 15



## **AWARDS**

2023

|

2022

2023

### **CONACYT Ciencia Frontera Postdoctoral Research Fellowship**

### **1st place at the Annual International Conference on Critical Assessment of Massive Data Analysis**

ISCB

📍 Lyon, France

- Anti-Microbial Resistance Prediction and Forensics in urban metagenomes

• July 2023

2022

### Mentee in the Mentoring in Action - Women and Girls in STEM

#### Online programme

British Council, Inova Consultancy, WITEC

 Mexico

- Humiko Yahaira Hernández Acosta

- April - June 2022

2022

### 2nd place at the ISCB-La SOLBIO BIONETMX WIKIPEDIA

#### COMPETITION

ISCB

 Queretaro, Mexico

- Matrices de distancias

- October, 2022

2020

|

2016

2018

### CONACYT PhD Fellowship

Ohio State University

 Ohio, USA

- Scholarship Program for International Mobility for National CONACYT Fellows

2016

|

2014

2011

### CONACYT Masters Fellowship

### Academia Mexicana de Ciencias Summer Research Fellowship for undergraduate students

Universidad Michoacana de San Nicolas Hidalgo

 Michoacan, Mexico

- Dr. Jorge Luis López López
- 3-variedades hiperbólicas

2010

### Academia Mexicana de Ciencias Summer Research Fellowship for undergraduate students

Universidad Michoacana de San Nicolas Hidalgo

 Michoacan, Mexico

- Dr. Jorge Luis López López
- 3-variedades hiperbólicas



### SYNERGISTIC ACTIVITIES

current

|

2022

### Long-distance Seminar on Geometric Group Theory in Mexico

 Virtual

- Co-organizer of Long-distance Seminar on Geometric Group Theory in Mexico

2023

### Encuentro Nacional de R ladies México

 Virtual

- Co-organizer of Encuentro Nacional de R ladies México
- September 23

2023

### II Escuela de Teoría Geométrica de Grupos

 Michoacan, Mexico

- Co-organizer of II Escuela de Teoría Geométrica de Grupos for undergraduate and graduate students
- CCM UNAM
- June 19 th - 23th

2023

### Hackaton Reto Critical Assessment of Massive Data (CAMDA)

 Michoacan, Mexico

- Co-organizer of Hackaton Reto Critical Assessment of Massive Data (CAMDA) de geolocalización de datos de microbioma
- CCM UNAM
- June 3rd - 7th

2022

### Hackaton TDA

 Michoacan, Mexico

- Co-organizer of the hackaton Análisis Topológico de Datos en el Hackaton Aplicaciones de Matemáticas en problemas de datos biológicos
- CCM UNAM
- November

2021

### Seminario de Ciencias Básicas

 Veracruz, Mexico

- Organizer and Co-organizer of the Seminario de Ciencias Básicas in the Instituto Tecnológico Superior de Martínez de la Torre, Veracruz for undergraduate students