

# Lathisms

## Latinxs and Hispanics in the Mathematical Sciences

It is often the case that mathematical proofs and theorems seem to magically appear out of thin air—as if in that magical moment of epiphany, the proof wrote itself in its beautiful form. Of course, for most of us, this is only an illusion—theorems occur after mental marathons, struggles, and refinement. Books also appear to us as if they fall from the heavens, often lacking a story of how the book came to fruition. We decided that it would be a disservice to not tell the story of how this book came to fruition, for every mathematical story has people behind it. Thus, we decided to begin this book of *Testimonios* with the story of Lathisms: Latinxs and Hispanics in the Mathematical Sciences. It is the editors' personal *testimonios* of a mathematical family brought together by a deep need to be seen and accepted as our authentic selves within mathematical spaces. We consider this book to be a tangible source of inspiration, not only for those who lack a mathematical family and those rising through the ranks, but for ourselves.

### A Chance Meeting – Pamela and Alicia

**Pamela Harris.** I completed my PhD studies in 2012 at the University of Wisconsin Milwaukee, and I later learned that Alicia completed her PhD studies the same year at University of Texas at Arlington. I worked on problems in combinatorial representation theory and Alicia on problems in mathematical biology. It is truly an example of mathematical and personal fate that we would meet each other, as we couldn't be further apart in our mathematical interests. Yet, this is the beauty of being MAA Project NExT (New Experiences in Teaching) fellows. I was a Silver '12 and Alicia a Brown '13 and we both attended MathFest 2013 in Hartford, Connecticut. Although the story of our meeting is something I prefer to tell over mezcal and tacos, I am happy to share it here because of the deep impact it had on us and in the many friendships we have cultivated since our meeting.

During MathFest 2013, I co-organized a panel on how to write letters of recommendations; something that no one ever taught me to do as a graduate student, but that I needed to learn as I was now a professor. Setting-up for the panel, I realized that none of us as organizers had remembered to bring a clicker to advance the panelists' slides. I left

the room in a hurry looking for Dr. Aparna Higgins, who at the time was the Director of Project NExT. I was sure that Aparna would be able to lend me a clicker. When I found Aparna by the registration table, she thankfully had a clicker. I fondly remember that as we fidgeted with the batteries ensuring they were placed in the correct orientation, Aparna took advantage of the opportunity to teach me that one should keep the batteries out of the clicker when not in use so that the batteries are not dead on arrival. With the working clicker ready, I quickly walked away to return to my panel, without a clue that the next few minutes of my life would lead to finding my mathematical soulmate.

**Alicia Prieto.** As a recent immigrant from Mexico, I had always had a hard time getting used to being “the only one” at every math conference or meeting. After a while, I made it a point to find any person of color that I could bond with. After realizing that among the 80+ Brown ’13 fellows there were exactly eight nonwhite participants, only four Latinxs of which only one was U.S. born, I decided to confront Aparna about this lack of representation within the Project NExT Fellows. This was the question I posed Aparna, who just minutes prior had handed Harris<sup>1</sup> a clicker, and she replied: “No, there are more! There is a Pamela Harris!” pointing to Harris who was about 30 feet away. With that last name, I was skeptical that Harris could be Latina. So when Aparna pointed her out in the crowd, as she was walking back toward her panel, and after I realized that Harris did “look” Mexican, I softly called out (in Mexican full-on volume) toward Harris’s direction: “Brown people!! Brown peopleeeeeeeeeeeee!” As Harris turned to look toward me to see who was screaming “Brown people,” and realizing that in fact I was shouting at her, she turned and saw me sprinting toward her. Harris stopped and waited for me to get closer and that’s when I began my inquisition:

Alicia: *Where are you from?*

Pamela: *México*

Alicia: *¿Hablas Español?*

Pamela: *Si.*

Alicia: *Y ¿de donde en Mexico?*

Pamela: *Guadalajara.*

Alicia: *Yo también!*

Pamela: *Ok. Sorry, but I have to go because my panel is about to start. Maybe we can go to lunch afterwards?*

I quickly scribbled my phone number on a scrap of paper to share with Harris; she still has that scrap paper and it is pictured on the next page. As Harris went off to her panel, I reflected on how happy I was to find someone who not only looked like me, but who was born in the same Mexican city of Guadalajara, Jalisco. By the end of our lunch that day we discovered that we were born just three days apart in the same city, we are the oldest of three siblings (one sister and one brother), and both of our mothers have the same name: Rosa. We also quickly discovered that we had another very important thing in common: a terrible thirst for a family within the mathematical community|a family of people who shared our culture, values, and beliefs. A family we believed existed, but which often felt so invisible. That chance encounter was the beginning of the Lathisms family.

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<sup>1</sup> This is the official nickname for Pamela.

Scrap of paper where Alicia gave Pamela her phone number along with a copy of the program for MAA MathFest 2013.



Photo courtesy of Pamela E. Harris.

## The Founding of Lathisms

**Pamela Harris.** Many good ideas have begun from conversations and discussions via social media. Lathisms is one such idea which began in the spring of 2016 when on social media someone asked if there was a repository or a list of minority mathematicians. Someone pointed to the SACNAS biography project, yet this only had a few mathematicians. Motivated by this, in private conversations with Alicia, Alexander Díaz-López, and Gabriel Sosa, we decided that if no such website existed, we would create it. We were especially excited for the timing since it would allow us to unveil this website during Hispanic Heritage Month that upcoming fall.

This was the birth of Lathisms: Latinxs and Hispanics in the Mathematical Sciences in 2016. We began Lathisms with the idea of bringing visibility to the vibrant and active Latinx and Hispanic community within the mathematical sciences by creating a Hispanic Heritage Month calendar (running yearly during National Hispanic Heritage month, from September 15–October 15) in which a featured mathematician was uncovered daily. Our primary goal was to provide an accessible platform that featured the multifaceted and diverse nature of the Latinx and Hispanic mathematical community and which would inspire younger generations of mathematicians. This work expanded to collaborations with the American Mathematical Society for a poster, and with the financial support of the Mathematical Association of America we were able to expand our efforts to include podcast interviews hosted by Evelyn Lamb.

**Alicia Prieto.** The work of Lathisms in those initial years came with a lot of feedback from the community at large. Most of this feedback was quite positive, but some came with a warning to us about the time commitment it takes to make such initiatives last. This was well-intended seeing how we were all early-career mathematicians, and those sharing their concern were right to think that we might fall behind on our research and possibly live through some negative repercussions later on in our careers.

Harris and I are the first to admit that the workload in running Lathisms was intense, especially as there were only four of us involved during those initial years. The support from the MAA in the form of a Tensor SUMMA grant alleviated some of the workload as we were able to hire a web developer, Richard Diaz, but as Alexander stepped down to move onto other projects and later Gabriel; Harris and I needed to reassess the workload

and bring in additional people with a passion for advancing the Lathisms mission and vision and who would help us lead the organization. Hence, in 2018 we created a Lathisms Leadership Team and a Lathisms Junior Associate Team.

**Pamela Harris.** With the need for additional help to run Lathisms, Alicia and I discussed who to include in the Lathisms Leadership Team. We both agreed that we needed someone who was dependable and passionate about addressing issues of underrepresentation of Latinxs and Hispanics in the mathematical sciences. Naturally, Luis Sordo Vieira came to mind given his move to research in medicine following his completion of a PhD in number theory. After working together for a few months, we realized we needed more help. This sparked the idea of putting together a Junior Associates Team, made up of rising stars who shared our values and who could help shape the future of Lathisms. Our first goal was filling a need for someone who had a background in scientific writing and a network within applied mathematics, and luckily we knew Vanessa Rivera Quiñones who came highly recommended by Alexander Diaz-Lopez and had established a track record in her work.

**Alicia Prieto.** New to the team was another rising star within our community; Andrés Vindas Meléndez, whose trajectory Pamela knew of from years prior, brought energy and renewed passion for highlighting the broad diversity within the Lathisms community. Finally, we knew we needed an expert in mathematics education, especially as the 2019 Lathisms calendar would focus on math educators. Fortunately, I knew one of the BEST mathematics education researchers, who happened to be another amazing Latina, and who happened to be one of my best friends: Rosaura Uscanga Lomeli. The addition of Vanessa, Andrés and Rosaura to the Lathisms Team has made the team awesome.

## The Lathisms Team

**Luis Sordo Vieira.** I graduated from the University of Kentucky in 2017, completing my undergraduate studies at Wayne State University. As a Venezuelan-American mathematician, I, like Alicia, also experienced being “the only one” in several spaces, as this has often felt like the rule rather than the exception. Although I had met Pamela at the Latinos in the Mathematical Sciences Conference at the Institute for Pure and Applied Mathematics in 2015, Lathisms was where our friendship really started. I found a mathematical older sister, not in the sense of an academic co-descendant, but rather in the sense of an additional familial older sister, a person I could trust who would tell me when I messed up, cherish my successes, and give me a hand when I struggled. When I decided to change focus from my PhD work in number theory to applying mathematics to medicine in my late years of graduate school, I remember my doubts and fears of failing fading away as I told Pamela about my plans. Pamela displayed an honest joy—a joy that many reserve for their own success.

A year after graduation, Alicia (who by then I had already met and admired her quick wits and fearless will to speak out) and Pamela invited me to join the Lathisms family as part of the Leadership Team. I accepted without hesitation, as it is a rare opportunity to work side-to-side with your family on something that you believe to have a deep impact on your community. And the Lathisms family kept expanding. I find a great sense of joy in contacting the Lathisms calendar nominees, reading why they were nominated, and in reading and editing their stories. Reading their stories and working with the rest of

the Lathisms team to highlight all of these outstanding accomplishments on either the website, articles, or this book, served not only as a source of inspiration for the pursuing of new mathematics—but also as a source of motivation to keep striving for a more equitable society.

**Vanessa Rivera Quiñones.** Born and raised in Puerto Rico, I was always excited to meet other Latinx/Hispanic mathematicians. As an undergraduate, I studied at the University of Puerto Rico at Río Piedras and met Alexander Díaz-Lopez during a Calculus competition. I saw in Alexander a contemporary role model and was very excited about his work with Lathisms. However, joining Lathisms came a while later, when Pamela invited me to join the team. At the time, I was a graduate student at the University of Illinois at Urbana-Champaign. I had met Luis and Andrés at the Latinxs in the Mathematical Conference in 2018, and seen the powerful work done by the co-founders. So, I jumped at the opportunity to collaborate with the team.

It has been all I ever hoped for and more. I am inspired by each of the members, and how they bring their full selves to this life-transforming work. I've learned so much from Pamela, Alicia, Luis, Rosaura, and Andrés. It's through their passion, dedication, and hard-work that Lathisms has been able to grow and become a family. By featuring and sharing the personal and professional stories of Latinx/Hispanic mathematicians through so many avenues (i.e., our website, posters, podcasts, and articles), we've painted a rich picture of our honorees and our community. For me, working with the Lathisms team has been a way to honor those that are paving the way to make mathematics a home for us.

**Andrés Vindas Meléndez.** I first met Pamela during the 2012 SACNAS National Conference, where Pamela was a poster judge and I was presenting my undergraduate research. We corresponded by email after the conference with intentions to work on mathematics together, but life happened and mathematical collaborations did not come until years later. After completing my undergraduate studies at UC Berkeley, I pursued a master's degree at San Francisco State University, where I found a community that shared my passions for both mathematics and social justice. At San Francisco State, I co-founded and co-organized the Distinguished Women in Mathematics Lecture Series in the Fall of 2016. Fortunately, Pamela was attending an American Institute of Mathematics workshop in nearby San José and accepted our invitation to be our first distinguished speaker. Since then we have attended and bonded at several national and international conferences, collaborated on research and organizing conference sessions. I met Luis at the 2015 Latinos in Math conference. It was encouraging to meet other Latinx graduate students at the conference and this is where Luis shared with me his experiences as a graduate student at the University of Kentucky; I would go on to attend the University of Kentucky for my PhD, exemplifying the power of connections. I had the pleasure of meeting Alicia (after having heard amazing things about her) at the 2018 Critical Issues in Mathematics Education Conference hosted by the Mathematical Sciences Research Institute at Berkeley. It felt as if I had known Alicia forever. As mentioned by Vanessa above, we met in person at the second iteration of the Latinos in Math conference in 2018. As a fun fact, I had actually emailed Vanessa for help on a graduate fellowship a few years before after noticing her name on the roster of award recipients. While I have not had the pleasure of meeting Rosaura in person, I value her presence on the team and admire her contributions and knowledge of mathematics education.

When I was asked to join the Lathisms team, as a Junior Associate, I accepted immediately since I knew the team is amazing. In a short time we have connected and have created very close bonds. Our different personalities, qualities, and abilities, makes the team work so well! Since joining the Lathisms team, I have helped expand the work and network of Latinx mathematicians. My goals within Lathisms is to facilitate the professional development of Latinx mathematicians and their supporters to create a space where everyone feels comfortable and supported so that they can thrive in whatever mathematical pursuits and directions they take.

**Rosaura Uscanga Lomeli.** Alicia and I met in 2008 back when I was in my first year of my undergraduate studies and she was working on her PhD at the University of Texas at Arlington. There were not many Hispanics in the mathematics department so I noticed Alicia right away, but as a first year student in college, I was scared to approach her. If you know Alicia, you know that she makes a significant effort to build a network with fellow Black and Brown mathematicians, so she noticed me one day at math club and made sure to come introduce herself (she asked me who I was, where I was from, and more importantly for her, if I spoke Spanish). We found out we were both from México which gave us a shared perspective on life in the U.S., and being around her made me feel close to home. Right away I felt a connection with her! She has been a constant source of inspiration and support in my life. For the rest of my undergraduate education, we met weekly for lunch and for walks around campus. She quickly became an important part of my life and I was excited for her to get to know my family and for them to get to know her. So I invited her over to my house (I lived with my parents at the time) to meet my whole family and they loved her as much as I do. From then on, she knew she was always welcome at my house and at any family gatherings; she was part of the family. She became like my older sister (although she says younger, because she claims I am more mature but I disagree).

In light of our deep connection, I happily accepted the invitation to join Lathisms in 2019! I was honored that they thought of me to help out with their mission. At the time, I only knew of Pamela because I had heard a lot about her from Alicia and her story had inspired me—the stories I had heard about her life resonated with me. So I thought there was nothing better than getting the opportunity to work with two amazing Latina mathematicians. Once I became part of the team, I “met” (online) Vanessa, Andrés, and Luis. While I have not yet had the pleasure of meeting them in person, these amazing individuals have made a huge impact in my life and inspire me each and every day. They are passionate about everything they do and are dedicated to making Lathisms better each year and to make the road easier for Latinx and Hispanic students who aspire to become mathematicians. I had never before been surrounded by so many Hispanics in mathematics and I’ve got to admit that it is pretty awesome. Working at Lathisms does not feel like work, our weekly meetings feel just like spending time with family.

## Testimonios: Stories of Latinx and Hispanic Mathematicians

Mathematics is not created nor discovered in a vacuum. Inherent to mathematical progress is the stories of the people behind it. So as we reached the fifth anniversary of Lathisms, we wanted to highlight the power of stories about our community and family. We compiled this book because we thought that seeing the *testimonios* of inspiring math-

emicians could help further the growth and the brilliance of the community of Latinx and Hispanic mathematicians. Our goal has always been to inspire younger generations of Latinx and Hispanic mathematicians, so that they may see themselves reflected in these stories, and so they may learn that we stand on the shoulders of giants; inspiring the next Tapias and Toros of mathematics. This book also highlights rising-stars in our community. Their lives and journeys will inspire current undergraduate and graduate students who often seek a role model who shares their language, culture, and heritage, and who are clearing the path in front of them so they can reach further than ever before. Moreover, these stories talk about the American experience at large. We seek to inspire anyone who has or wants to have a career in mathematics or any other STEM field—particularly those from underrepresented groups. In general, we want to reach a wide variety of individuals at all different stages in their careers. We hope this book helps people outside of our community, specially those who want to be allies or mentors, realize the particular challenges faced by minoritized populations and we offer, in the many examples, a window to potential barriers and to ways in which everyone can help overcome them.

In addition, this book was also for ourselves. As we read every *testimonio*, we relived those stories and imagined the impact these narratives would have had on our younger selves and on our trajectories in the mathematical community. How less isolated, lonely, and lost would we have felt as some of us immigrated to a new country, learned a new language, or failed graduate school examinations. Knowing we are not the only ones to have struggled and who have overcome would have helped us tremendously in those times of need. It is because of this that we consider this book a true success, for the impact it has had on us is immeasurable. These stories have truly inspired us. The great efforts to overcome challenges, both personal and systemic, and the resilience and devotion of outstanding researchers and educators showcased through these stories have energized us in an extremely difficult year.<sup>2</sup>

We end by extending our thanks to Ana Valle for the beautiful illustrations accompanying each chapter, and by expressing our deep gratitude to all of those who contributed to this book. We thank you for sharing your stories, your lives, your beings, fully and authentically. We want to acknowledge that, for many, this was a cathartic, and sometimes, emotionally painful and time consuming process. We are confident your *testimonios* will inspire all within the mathematical community to pay attention to the struggles, inequalities, and problems that we, as a community and as individuals, should strive to resolve in order to improve the experience of those marginalized in mathematics, including Latinxs and Hispanics. Our future is brighter because of your words and your work.

Con mucho amor y respeto,

Pamela E. Harris

Alicia Prieto Langarica

Vanessa Rivera Quiñones

Luis Sordo Vieira

Rosaura Uscanga Lomelí

Andrés R. Vindas Meléndez

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<sup>2</sup> This book was written and edited during the global COVID-19 pandemic.



Photo courtesy of Pamela E. Harris.

The Lathisms Team.

## Agradecimientos y Dedicatorias / Acknowledgements and Appreciation

**Pamela.** *Toda historia tiene un comienzo, y para mi esta empieza con mis gracias a mis padres, Rosa y Jorge, por todos los sacrificios que han hecho para que yo tuviera la oportunidad de poder realizar mis sueños. Toda mi vida seguiré tratando de hacerlos orgullosos por que quiero que sepan que sus sacrificios no fueron en vano. Para mi hermana y mi hermano, Ana y Jorge, les agradezco toda una vida de inspiración. Para mi hija Akira, mi sueño para ti es que encuentres tu pasión y que continúes trabajando para crear un mundo mas justo. Para mi pareja, Jamual, mi amor desde los quince años. No tengo palabras para agradecerte todo lo que siempre has hecho por mi y por nuestra familia. Lo bueno que he podido contribuir a este mundo es por que siempre me as apoyado y querido. Te amo!*

Every story has a beginning, and for me it begins with my thanks to my parents, Rosa and Jorge, for all of the sacrifices they have made so that I had the opportunity to make my dreams come true. Throughout my life I will continue trying to make you proud because I want you to know that your sacrifices were not in vain. For my sister and my brother, Ana and Jorge, I thank you for a lifetime of inspiration. For my daughter Akira, my dream for you is that you find your passion and that you continue to work to create a more just world. For my partner, Jamual, my love since I was fifteen, I have no words to thank you for everything you have always done for me and our family. The good things that I have been able to contribute to this world are because you have always supported and loved me. I love you!

**Alicia.** First and foremost, I want to thank the authors for writing these amazing *testimonios*. We are all incredibly grateful for trusting us with your stories and for taking the time to relive the many times traumatic episodes you all share with us and allowing us to witness and celebrate your many successes. I also want to thank Mr. for his love and unconditional support. *A mis padres. A mi abuelo Max, (fintas), quien siempre fue partidario de mi educación y maestro, en ejemplo, de disciplina y trabajo duro. A mi abuela Lupe, (Buki), que paso horas ayudandome a aprender las tablas de multiplicar. A mi abuela Hildelisa (Licho), que me amo tal como siempre he sido (su morisqueta la extraña todos los dias) Y finalmente a mis abuelos Agustín y Alicia, que nunca conocí mas cuya sangre corre en mis venas y alimenta mi trabajo y misión.*

**Luis.** *Para mi gente, que demuestran los valores del empeño, trabajo duro, y sacrificio. Para mi gente del pasado, que han sacrificado tanto para que yo pueda llegar a donde estoy hoy. Para mi primo Alejandro Sordo Vieira, el niño que me enseñó que uno puede sonreír puramente al frente de una tragedia. Para mi mamá y papá, las personas que siempre estarán a mi lado. Para Sarah y Joaquin—los amo con todo mi corazón. Con cariño para toda mi gente.*

**Vanessa.** This book would not be possible without the authors who shared their powerful stories of success, hardship, and perseverance. I am grateful for your trust and confidence in us as safe-keepers of your stories. Thank you for paving the way for many of us. To my fellow editors, thank you for your dedication and work to make these stories shine and reflect the authors' authentic voices. *Para mis padres, Gloria y Rafael, y mis hermanos, Glorimar y Rafael José, gracias por siempre apoyarme, ser mis fans número uno y una parte vital de mi historia. Para mis abuelos, que aunque su vida no fue fácil, se empeñaron en crear un mejor futuro para nosotros. Su legado vive a través de nosotros—los amo.* To my partner Gert, for your love and support, and for always empowering me to use my voice to make a difference. To Elke, for being my friend, cheerleader, and walking by my side in my journey. *Para mi gente, que estas historias sean una celebración de nuestro recorrido y el camino que queda por recorrer.* To my friends that have become like family, you inspire me to fight the good fight. Finally, to the reader, thank you for honoring these stories with us.

**Rosaura.** *Para mis padres, Rosa y Victor, que han sacrificado tanto por mi y siempre me han brindado amor y apoyo incondicional. Me han enseñado lo importante que es luchar por lo que quieres y nunca darte por vencido. Mi padre siempre dice “No me digas que no puedes, dime que no sabes.” Toda mi vida he llevado esta frase en mente que me recuerda que yo puedo, aunque a veces las cosas sean difíciles. Los amo con todo mi ser.* For my little sister Fernanda, who is my partner in crime and has always been unafraid to stand up for what she believes is right and just. She inspires me to do better and be better every day. I love you sis. *Para mi tío Rafa, que ya no está con nosotros, pero con su ejemplo me enseñó a nunca dejar de aprender. Te extraño. Para toda mi maravillosa familia, son mi fuente de inspiración. Los quiero. Y finalmente, para mi esposo Alek, who is my biggest supporter y una de las personas con el corazón mas grande y lindo que conozco. Siempre ha estado a mi lado ayudandome y apoyandome en todo momento. Te amo hoy y siempre, my love.*

**Andrés.** *Para mis creadores, Mami (Sara) y Papi (Rodolfo). Para mis hermanas, Alejandra y Sarah. Para mis padrinos, Ana y Julio. Para mi familia con la que el universo me bendició (mis tíos, tías, primos, y sobrinos) y para mis amigos que se han convertido en familia. Gracias por su amor y por apoyar mis metas. Para mis maestros que me enseñaron a apreciar la belleza de la matemática. Gracias a todos que han cruzado mi camino y me han ayudado a redefinir lo que significa ser matemático. Gracias a la vida que me ha dado tanto. ¡Pura vida!*

For my creators, Mami (Sara) and Papi (Rodolfo). For my sisters, Alejandra and Sarah. For my godparents, Ana and Julio. For my family with whom the universe blessed me with (my uncles, aunts, cousins, and nephews) and for my friends who have become family. Thank you for your love and for supporting my goals. For my teachers who taught me to appreciate the beauty of math. Thank you to everyone who has crossed paths with me and has helped me redefine what it means to be a mathematician. Thank you to this life, which has given me so much. *¡Pura vida!*