The Hispanic Physicist

The Newsletter of the National Society of Hispanic Physicists

http://www.hispanicphysicists.org/

Year 24 January 6, 2021

Mario Molina, 2011, *Source: Wikipedia*

In Memoriam: Mario Molina

Last December 14, 2020, an event was organized at Colegio Nacional, Mexico, dedicated to the memory of Mario Molina, who passed away last October 2020. A Mexican-born scientist that received the Nobel Prize in Chemistry for his work on the harmful effect of CFCs, 1995.

Mario Molina held research and teaching positions at U. of California Irvine, the Jet Propulsion Lab at Caltech, the Massachusetts Institute of Technology, among other well-known institutions.

El Castillo, Chichen Itza, Mexico. Source: Wikipedia.

State-of-the-Art Technology to Explore El Castillo Pyramid in Mexico

Chicago State University's (CSU) Physics Department is leading research in cutting-edge technology along with Dominican University (DU) through a grant from the National Science Foundation (NSF) to map archaeological pyramid structures in Mexico. The four-year grant also allows CSU, a U.S. Department of Education designated Predominantly Black Institution, to join forces with DU, a Hispanic-serving University, in increasing the number of underrepresented students in STEM disciplines and research.

One of the members of the research team is Edmundo Garcia-Solis--NSHP board member—together with Austin Harton, both from Chicago State U. They will work with Dr. Joseph Sagerer, Senior Physics Lecturer at DU; Dr. Mark Adams, UIC professor emeritus, currently working at Fermilab; Sten Hansen, electrical engineer recently retired from Fermilab; and their collaborators based in Mexico: Dr. Eduardo Pérez de Heredia, archaeologist, director of Frecuencia Cero Technology for Conservation, and M.Sc. José F. Osorio León, chief archaeologist at Chichen Itza.

This multidisciplinary and international team will develop hardware, electronics, and data analysis tools to measure the quantity and direction of the atmospheric muons that go through archaeological structures.

Panoramic view of the Arecibo radio telescope primary dish. Source: Wikipedia.

The Arecibo Observatory 305-meter Radio Telescope

By Mayra E. Lebrón and Carmen A. Pantoja
University of Puerto Rico, Río Piedras Campus

December 4, 2020

How do we feel about the collapse of the Arecibo radio telescope? We have been asked this question frequently these days. How do you answer such a question? Do you answer from the professional point of view, the loss of research or from the human point of view, colleagues, employees, friends, community that are affected directly. As we reflect upon our projects, our students and our community, we can tell you: it's a great loss!

As for many scientists of the world, some of our current research projects have been halted by the loss of the Arecibo radio telescope.

We have worked in research projects with data from the Arecibo Observatory radio telescope for more than 30 years, since we were undergraduate students at the University of Puerto Rico and our mentors took us to the Observatory for the first time. Our careers as scientists, educators and outreach professionals has much to do with the Arecibo Observatory radio telescope. That is so because we valued the opportunity this word class astronomical research facility was for our community in Puerto Rico. For us, pursuing a career in astronomy was not enough, we envisioned becoming professional radio astronomers to be able, not only to use Arecibo for our research but also, to inspire the youth of our community to pursue scientific careers.

Through the years, we have given the opportunity to hundreds of undergraduate and graduate students at the University of Puerto Rico to participate in research projects with us. All have had the opportunity to visit the facilities. We have collaborated with the Arecibo Observatory Research Experience for Undergraduate (REU) program, and many of our students participated in the program each year. What a memorable summer on June 8, 2004 when we all gathered next to the Arecibo Observatory Angel

Ramos Visitor Center to observe the transit of Venus with staff scientists, REU students and others. For many years our students at UPR have participated in the Undergraduate ALFALFA Team (UAT). UAT is a collaborative group of researchers with their undergraduate students from more than 20 undergraduate universities in the U.S. that work together on a common research theme using Arecibo ALFALFA data. A great effort is placed on providing the students with the basic principles of radio astronomy so they can then initiate their research project experience. We remember when we had fifteen undergraduate students and one graduate level student doing remote observing with Arecibo during the night of October 24, 2016 at the UPR-RP campus. These astronomical observations were part of "The Arecibo Pisces-Perseus Supercluster Survey" research project of the UAT. That night we took spectra of galaxies by observing the 21-cm line of neutral hydrogen.

As users of the Arecibo Observatory from the local community we had the opportunity, together with our students, to visit the facilities and participate in special conferences like the Gordon Distinguished Lectureship. We met scientists like Dr. Gordon Pettengill, a pillar of radar astronomy (February 15, 2005). Our students had also the opportunity to talk and interact with Dr. Bill Gordon, the father of the telescope and his friends that built the telescope. They were more than happy to tell our students their life stories of when they built the telescope. How thrilled we all were when we met Dr. Jocelyn Bell Burnell on June 27, 2006. The Arecibo Observatory was the center of gravity for scientists from all over the world, and for our students' it was a golden opportunity to meet them.

Our projects of accessible astronomy started at the observatory. Our first project was a tactile model of the radio telescope to enable blind visitors to participate in the excitement of visiting the world's largest radio telescope (Astronomy Education Review, 2007, vol. 6, Issue 1, p.1-14). We prepared videos to accompany our adapted materials e.g. Crab Nebula tactile image, Vela Supernova Remnant.

In 2008 the Arecibo Observatory Learning Center and the Angel Ramos Visitor Center hosted our workshop to train a multidisciplinary group of undergraduate students to participate in the International Astronomical Union - International Year of Astronomy (IYA2009) as facilitators of the events. This group was called the “Starry Messengers", many of these students went on to pursue professional careers in science. It was a workshop that included two blind students and allowed all of them to learn about science communication and accessible astronomy. These accessible astronomy materials have been shared internationally, e.g. IYA2009 Puerto Rico and Israel.

We participated in “Around the World in 80 Telescopes” an ESA webcast transmitted on April 3, 2009 as part of IY2009. The Arecibo Observatory video was prepared as part of the course “Film Production II” (COMA4342) under the direction of UPR-RP Prof. Carlos Malavé with the undergraduate students: Javier Alfonso, Marielys Cancel, Karla Cardona, Carol Castillo, Frances González, Pedro Guzmán, Santos Lebrón, Lucía Mateo, Iván Pérez, Javier Soto and Samuel Vélez. These students learned about science and were on a path to careers in professional communications.

How can we forget the time we had more than 800 hundred public school children, for the very first time

in their lives, see what scientists do at conferences by walking through the poster exhibits of the American Astronomical Society - Division of Planetary Sciences 41st annual meeting held in Fajardo, Puerto Rico in 2009. The scientists were very welcoming, everywhere you looked there were groups of students with scientists who used their conference breaks to talk to the students about telescopes, black holes and more. Eng. Orlando Figueroa, a puertorrican engineer Director of the Mars Exploration Program at NASA also collaborated in this outreach event providing brief talks to the groups of students. Dr. Peter Jenniskens (SETI Inst.) even showed the students a fragment of asteroid 2008 TC3. We still encounter teachers who tell us how positive this activity was for their students. We are very proud of these major outreach activities during a professional astronomical conference.

In 2017 we collaborated with a high school in Germany. Undergraduate students of the University of Puerto Rico in the Descriptive Astronomy course (ASTR3005) prepared a video to share with high school students from Friedrich-Schiller-Gymnasium Weimar, Germany and their Prof. Mario Koch. The video is about the experience of the visit to Arecibo Observatory on February 25, 2017. Participating students were: Jayliz Morales (camera) , Rey A. Ortiz Cordero, Pedro Morciego Mondecit, Nathalia P. Rodríguez Trujillo, Luis R. Pérez Villaronga, José A. Castro Arroyo, Juan Álvarez.

When in 1998 UPR-RP Dr. José Nieves organized the Particle Physics and Cosmology: First Tropical Workshop; High Energy Physics: Second Latin American Symposium we had the visit as guest speakers of Dr. Sheldon Glasgow, Dr. Joseph Taylor and Dr. Alex Filippenko. We also benefited from visiting scientists to Arecibo Observatory like in 2019 when Dr. Dale Ferguson visited the campus to offer the public talk “Einstein, Eddington and Me, 100 years passing the test” on February 4, 2019.

The Arecibo Telescope was the eye to the Universe for Puerto Rico and the Caribbean, and a door of opportunities for our students. The 1st of December 2020, the eye and door were closed. We are indeed saddened. The world has lost a remarkable radio telescope. Our region of the Caribbean has lost an important resource for research, education and outreach.

OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION

DHS Summer Research Team Program For Minority Serving Institutions Summer 2021

My name is Beth White and I am the Program Manager for the Department of Homeland Security Summer Research Team Program for Minority Serving Institutions. The purpose of the U.S. Department of Homeland Security (DHS) Summer Research Team (SRT) Program is to increase and enhance the scientific leadership at Minority Serving Institutions(MSIs) in research areas that support the mission and

goals of DHS. This program provides faculty and student research teams with the opportunity to conduct research at university-based DHS Centers of Excellence (DHS Centers), among other benefits. Since you are in a STEM field, I wanted to make you aware of the program for Summer 2021.

This message is intended to colleagues in all STEM fields, inclusive of social sciences so that they can identify a Center of Excellence with which their research interests align and submit an application for consideration. Faculty invited to submit a full proposal, will choose one or two students to attend the 10 week summer experience to complete their team. The program requires teams to be composed of one faculty member and up to two students (undergraduate and/or graduate level). Appointments will not be made to teams with no student member(s) or to teams without a faculty member.

As a former professor, I see this opportunity as ideal for both undergraduate and graduate students. It places them in “real life” facilities and allows them to begin to identify with the disciplines in a professional way. For faculty, the research collaboration is a unique research support and professional development opportunity often leading to future grants.

The DHS Centers of Excellence participating this year are:

- Arctic Domain Awareness Center (ADAC)
- Center for Accelerating Operational Efficiency (CAOE)
- Center of Excellence for Cross Border Threat Screening and Supply Chain Defense (CBTS)
- Criminal Investigations and Network Analysis (CINA)
- Critical Infrastructure Resilience Institute (CIRI)
- Coastal Resilience Center (CRC)
- Maritime Security Center (MSC)
- National Counterterrorism Innovation, Technology, and Education Center (NCITE)

As you follow each link, you will learn a bit more about the specific research projects currently underway at each location. However, there is plenty of room for you to propose a new topic!

I am available by email to answer any questions you may have as you move through the application process. Please visit http://www.orau.gov/ for additional program information.

To read about previous faculty experiences in our program, visit https://orise.orau.gov/. We welcome applications from many disciplines inclusive of the social sciences. The Faculty Application Guide located on the “*How to Apply”* page https://orise. may also be useful as you move through the application process.

Best Regards,

Dr. Beth White

Education Project Manager, ORISE

(865) 250-1707 (Main Phone)

Wessex Institute

The 2020 program of Wessex Institute (WIT) events is now complete and we would like to send a big thank you to everyone that has joined us this year.

Sadly, the world-wide health crisis caused by the COVID-19 pandemic during 2020, severely reduced people´s mobility, resulting in many institutions having to cancel their meetings and conferences. The Institute reacted quickly and promptly arranged a scheme of online events which allowed easy participation for delegates, wherever their location, something that was very important to us given the international nature of WIT meetings. The Institute is proud to report that the feedback received from our delegates in 2020 has been very positive.

For 2021, WIT is, as usual, planning an exciting program of conferences and short courses. Please find out more below.

With kind wishes from all Wessex Institute staff for the good health of you and your family.

2021 Conference Program

2021 Short Course Program:

- Short Course on Smart Cities: Lessons from a Pandemic 2021
- Short Course on Petroleum Fiscal Terms and Project Valuation 2021
- Short Course on Introduction to Air Pollution Modelling 2021

- Short Course on Structural Optimisation and Applications in Engineering 2021
- Short Course on Blast Effects and Analysis 2021
- Short Course on Water Supply 2021
- Short Course on Critical Infrastructure (Crit-Is) Energy Supply 2021
- Short Course on Computer-Assisted Oil Spill Environmental Assessments in Land and Water 2021

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Massachusetts Institute of Technology

MIT Office of Graduate Education, GradVersity

Time nor space could prevent 32 interns from engaging in our 35th Annual MIT Summer Research Program (MSRPx). Across 5 time zones, interns honed their skills through a series of professional development workshops, independent research projects, and community building activities during our first-ever virtual program.

Although we couldn't meet our prospective students in person, technology made us feel more connected than ever. GradDiversity, MIT faculty, staff, and the 2020 Graduate Diversity Ambassadors engaged with prospective students across the country at 8 virtual conferences.

We had a record-breaking number of registrants for our GradCatalyst Webinars: an MIT student-led workshop that helps undergraduates plan their academic trajectories. Thanks to the GradCatalyst crew, we were able to reach a wide range of prospective students.

OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION

National Library of Medicine Associate Fellowship Program

The Oak Ridge Institute for Science and Education (ORISE) would like to inform you of the National Library of Medicine (NLM) Associate Fellowship Program (AFP). Please consider that the deadline to apply is **January 28, 2021 11:59pmEST.**

This program provides opportunities for recent library/information science graduates interested in a career in health sciences librarianship. The program combines curriculum and project efforts at the NLM on the campus of the National Institutes of Health (NIH) in Bethesda, Maryland.

Apply today at https://www.zintellect.com/

Program Learning Objectives

The NLM-AFP offers an insider's view of the world's largest medical library. The program will provide knowledge and skills in project efforts ranging from:

- Data wrangling, data analysis, data visualization, programming, and data policy
- Policy and standards analysis and development
- Creation of online tutorials and educational videos, conducting user needs assessments
- Development of an in-depth understanding of the development, production, implementation of NLM product and services

The program also offers opportunities for professional development through:

- Participation in lectures, exercises, short and extended visits to other health sciences libraries
- Attendance at local and national conferences, including the Medical Library Association annual meeting
- Workshops on work style, resume review, negotiation, and presentation skills
- Mentorship from a program coordinator and NLM staff who serve as preceptor

Appointment Length

This appointment is a twelve month residency research appointment starting September 1, 2021 and ending August 31, 2022. A second year appointment may be possible upon recommendation of NLM contingent on funding availability, project assignment, program rules, and availability of the participant.

Participant Benefits

- Annual stipend of $59,534
- Health Insurance Supplement $500 per month - *Proof of health insurance is required for participation in this program. Participants are eligible to purchase health insurance through ORISE.*
- Relocation Allowance, for participants who live more than fifty miles, one-way, from the assigned facility
- Training and Travel Allowance for attendance at local and national conferences

For additional information about the program, see the NLM-AFP web site at:
https://www.nlm.nih.gov/about/

Qualifications

The National Library of Medicine Associate Fellowship program is open to those who meet the following qualifications:

- Hold United States or Canadian Citizenship
- Be at least 18 years old by August 1, 2021
- Have earned an American Library Association (ALA)-accredited master's

Preferred Qualifications include:

- United States Citizenship
- Work Experience in a library or health sciences environment
- Demonstrated interest or experience in leadership.

NSF Data Analysis and Statistics Summer Internships

Deadline: March 31, 2021, 4:00PM EST

The National Science Foundation (NSF), National Center for Science and Engineering Statistics

(NCSES) provides policy makers and the public high-quality information on the science and engineering enterprise.

This internship is for participants in a wide variety of fields including, but not limited to: Business Management, Communications and Graphic Design, Computer Sciences, Economics, Marketing, Mathematics and Statistics, and Survey Methodology.

What will I be doing?

As a Research Ambassador intern, you will have the opportunity to explore a federal career and gain a competitive edge as you apply your education, talent and skills in a variety of settings. You will learn and collaborate on projects that make use of expertise from a variety of fields, including survey methodology, survey statistics, economics and other social science disciplines to design, study, implement and conduct national surveys to measure the science and engineering enterprise. You will also be engaged in research projects, evaluation initiatives, surveys, data collection and specialized analyses.

What is the anticipated start date?

Exact start dates will be determined at the time of selection and in coordination with the selected candidates. Appointments are typically between May and September.

Where will I be located? Alexandria, VA (Washington D.C. area)

Appointments may result in a virtual placement due to COVID-19 impacts.

What are the benefits?

You will receive a competitive stipend for living and other expenses as determined by NSF. Stipends are typically based on academic standing, discipline, and experience. You may also be eligible to receive a health insurance allowance and reimbursement for travel expenses.

Learn more about the NCSES Research Ambassadors Program at https://orise.orau.gov/ncses/.

Questions? Email NSF-NCSES@orise.orau.gov.

Repperger Research Intern Program

The Repperger Research Intern Program is a 10-week educational experience, providing research opportunities for students at one of three Air Force research facilities under the mentorship of an Air Force scientist. The program posthumously honors Dr. Daniel W. Repperger, who mentored many young

people during his 35-year research career with the Air Force Research Laboratory (AFRL).

Eligibility:

Applicants need to meet the following eligibility criteria at the time of application:

· Be a U.S. citizen.

· Be enrolled as an undergraduate or graduate student at an accredited institution of higher education during the 2020-2021 academic year.

· Be pursuing a degree in a science, technology, engineering or mathematics (STEM) discipline.

· Have a cumulative GPA of 2.50 or higher on a 4.00 scale.

Research Locations:

· Wright-Patterson Air Force Base, Dayton, OH

· Joint Base San Antonio-Fort Sam Houston, San Antonio, TX

· Carnegie Mellon University, Pittsburgh, PA

Program Dates: June 7 – August 13, 2021

Submit your application at the following link: https://www.zintellect.com/

Application Deadline

February 15, 2021, at 8 a.m. ET

For additional information, visit the Repperger Research Intern Program website. If you have any questions, please contact AFRL-Summer@orise.orau.gov.

Massachusetts Institute of Technology

Info on MIT Online STEM Program for Current High School Juniors

Do you know current high school juniors who are excited about STEM? Encourage them to apply

to our MIT Online Science Technology and Engineering Community (MOSTEC)!

Our MOSTEC program empowers highly-motivated scholars to deepen knowledge, embrace confidence, cultivate community and pursue their passions for STEM at the nation's top colleges and beyond.

We are looking for students with demonstrated academic potential and we need your assistance in sharing more about this transformative opportunity.

With Covid-19 impacting our traditional recruitment efforts, we need your help more than ever this year to connect us with talented students! If you or someone you know would like to learn more about MOSTEC, we invite you all to attend our upcoming information sessions:

For *educators* on Thursday, January 7 @ 8 PM EST Register now!

For *students & families* on Tuesday, January 12 @ 8 PM EST Register now!

where you will hear about the program from our staff and alumni, learn more about the application, recommendation requests, and have a chance to ask questions. Did I mention, because of generous support by sponsors the MOSTEC program is offered at **no cost to students** and financial support for travel is also available!

If you know any students who may be interested in MOSTEC, could you please forward the information below? For any questions, please do not hesitate to email us (summerapp@mit.edu) or call our office at your convenience (617-253-3298). *Note: Our offices will be closed December 24 - January 3, but we will back in action on January 4.*

Thanks for your time and for helping us to ensure that STEM careers are accessible to all!

Please note*: Due to Covid-19, we are suspending our residential program, MITES, for summer 2021 and will further expand our award-winning online program, MOSTEC. The in-person MOSTEC conference hosted at MIT remains to be determined.*

Thank you,

Adriana Espinal

MIT Office of Engineering Outreach Programs (OEOP).

EERE Energy Storage Internship Program

The U.S. Department of Energy (DOE), Office of Energy Efficiency and Renewable Energy (EERE) Energy Storage Internship Program offers 10-week, hands-on, practical internships at U.S. national laboratories. Participants will conduct research related to the development of newer chemistries, battery designs, and manufacturing processes needed to usher in changes in energy storage.

As a participant in the EERE Energy Storage Internship Program, you will gain a competitive edge as you apply your education, talent, and skills to research and development projects focused on energy storage. You will be under the guidance of a mentor who is a technical staff scientist or an engineer at a national laboratory. You will be able to establish connections with DOE scientists and subject matter experts that will promote long-term relationships between yourself, researchers, and DOE.

Benefits:

- Stipends: Undergraduate students receive a $600 per week stipend. Graduate students and postgraduate students receive a $750 per week stipend.
- Housing Allowance: $150 per week for interns whose home location is more than 50 miles from the hosting facility
- Inbound/Outbound Travel Reimbursement: Up to $1,000 to/from assigned location for interns whose home location is more than 50 miles from the hosting facility.

Internships may result in a virtual placement due to COVID-19 impacts.

Eligibility:

- Be a U.S. citizen.
- Be at least 18 years old by May 1, 2021.
- Meet one of the following conditions:

- Recent graduate: Have earned an undergraduate or graduate degree in the past two years in a discipline related to energy storage.
- Undergraduate Student: Be enrolled as a full-time student as a junior or senior at a U.S. accredited college or university during winter/spring 2021 and be pursuing a degree in a discipline related to energy storage.
- Graduate Student: Be enrolled as a full-time graduate student at a U.S. accredited college or university during winter/spring 2021 and be pursuing a degree in a discipline related to energy storage.

For more information: energy.storage@orise.orau.gov.

PAESMEM Nominations and Applications Open

The Presidential Awards for Excellence in Science, Mathematics and Engineering Mentoring (PAESMEM) are excited to announce that nominations and applications for the 2020-2021 cycle are now being accepted! As a past PAESMEM recipient, your assistance in nominating candidates is a vital part of our goal to recognize exceptional mentoring.

To nominate an individual mentor or organization, complete the nomination form available on the PAESMEM website. All you will need is the mentor's or organization's name, email address, and contact information for their employer (if nominating an individual). You are welcome to submit multiple nominations if you know more than one individual or organization deserving of the award. The **nomination deadline is December 18, 2020** and the **application deadline is January 24, 2021**.

Berkeley
UNIVERSITY OF CALIFORNIA

Volunteers for a Study at UC Berkeley Astronomy Department

My name is Fatima Abdurrahman, and I'm a dissertation-year graduate student in UC Berkeley's astronomy department. For the last chapter of my thesis, I'm conducting a study in the field of physics/astronomy research education, specifically on the socio-cultural aspects of graduate programs. **I'm seeking graduate students, postdocs, and other recent PhD graduates who are doing/did their graduate studies in physics or astronomy at a US institution, and who identify as women or gender non-comforming people of color.** The purpose of this study is to understand the effects of predominantly white and male department environments on non-white, non-male graduate students.

Participation in this study involves:

- Conducting a 1-2 hour interview over Zoom in January, followed by a short (~5 min) survey
- Compensation for participation of $25/hr
- All collected data will be de-identified to maintain participant anonymity

For more information about this study, please contact me (the principal investigator), by email at fatima.abdurrahman@berkeley.

Thank you,

Fatima.

Jobs

Please visit our Job Board (http://www.hispanicphysicists.org/JobBoard.html) to see more information about these and other opportunities.

Opportunity	Deadline
Real Time Image Enhancement With Cross-Sensor Prior Information. Postdoctoral position within the Office of the Director of National Intelligence.	Feb. 26, 2021, 6pm, EST.
Computational Fluid Dynamics of Fast Moving Objects. Postdoctoral position within the Office of the Director of National Intelligence.	Feb. 26, 2021, 6pm, EST.

Cislunar Position Navigation and Timing. Postdoctoral position with the Dept. of Defense and the national Geospatial-Intelligence Agency.	Feb. 26, 2021, 6pm, EST.
Debugging for Quantum Computers. Postdoctoral position within the Office of the Director of National Intelligence.	Feb. 26, 2021, 6pm, EST.

The Hispanic Physicist. Published whenever there is news and the Editor has enough time. Send news, letters, congratulations, etc. to **Miguel Castro-Colin (**m.castrocolin@gmail.com**)**.

Our URL address is:
|http://www.hispanicphysicists.org/|