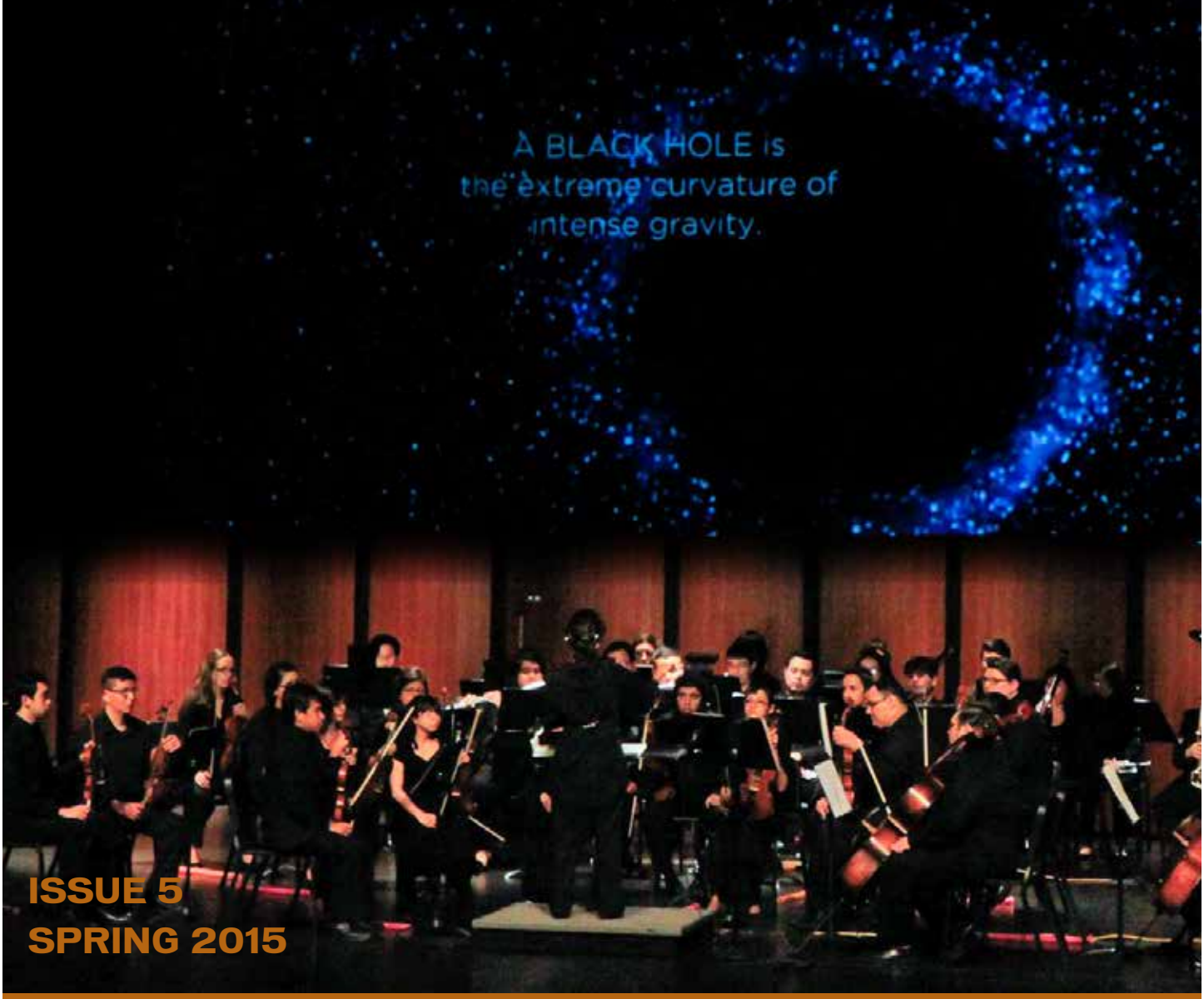
RIPPLES NEWSLETTER



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UTRGV coming fall 2015.

Department of Physics and Astronomy and the Center for Gravitational Wave Astronomy

utb.edu/cgwa

UT BROWNSVILLE

CGWA HOSTS CONFERENCE FOR UNDERGRADUATE WOMEN IN PHYSICS AT UTB

A local organizing committee led by CGWA Research Assistant Professor Cristina V. Torres hosted over 100 female physics majors for one of the American Physical Society (APS) regional Conferences for Undergraduate Women in Physics (CUWiP). Simultaneous conference were held at the North Carolina Research Triangle, Purdue University, Rutgers, the State University of New Jersey, UC Santa Cruz, University of Michigan, University of Mississippi, and Yale University.

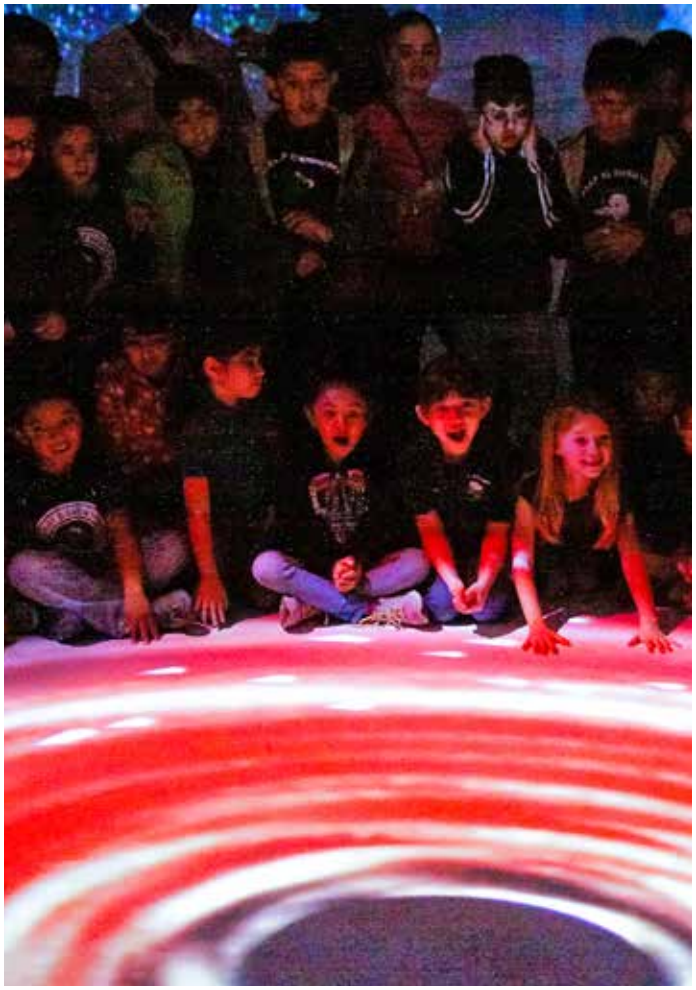
The conference at The University of Texas at Brownsville included a public outreach event to bring together undergraduate women studying STEM fields, allowing them to mingle with local K-12 students as part of a special presentation by Stanford graduate student Sarah Thornton on her journey towards a Ph.D. in physics.

THE TOROS PROJECT: A STATUS REPORT

Motivated by the need for a dedicated optical follow-up instrument for aLIGO/AdVirgo, scientists from The University of Texas at Brownsville, the Universidad Nacional de Cordoba, and Texas A&M University have partnered to develop an astronomical observatory in the Southern hemisphere. The site at Cordon Macon is located at latitude 24.61 South and longitude 67.32 West, at an altitude of 4,650 meters in the province of Salta, Argentina. The northern province of Salta is located on the other side of the Andes where major European and American astronomical observatories are located in Chile in the vast region on both sides of the Andes called the Atacama Puna. The scientists working in this partnership have created an international collaboration named TOROS: Transient Optical Observatory of the South. TOROS has signed a memorandum of understanding with the LIGO VIRGO collaboration which will allow it to receive trigger information otherwise restricted to members of the collaboration.

As a pilot project TOROS has installed its first telescope at Macon: a 0.40 m Schmidt Cassegrain telescope with an Apogee Alta U16 which has a 0.5 deg x 0.5 deg FOV with a 0.45 arcsec/pixel resolution. TORITOS will be operational when the Advanced LIGO first scientific run starts in the summer of this year and is capable of operating robotically. Although quite limited in the sky area coverage, it can survey up to 12 square degrees per night and detect events with a SNR=10 detection of a V=20 mag transient under median observing conditions.

CGWA PARTNERS WITH BROWNSVILLE MUSEUM OF FINE ART



Excerpts from the Brownsville Herald

The Black (W)hole immersive art installation is the centerpiece of the Brownsville Museum of Fine Art (BMFA) Celebrating Space exhibit on display November 2014 - May 2015. CGWA partnered with BMFA to bring the art installation developed by the Einstein Collective to Brownsville and to get a grant to bring 5500 local K-12 students to visit the museum.

Students from Sharp Elementary visited BMFA in January to explore the wonders of space at the museum and see how science and art work hand in hand in creativity. The show celebrates a long tradition of scientists and artists inspiring one another, consisting of photography, art, sculptures, and the *Black (W)hole installation*.

STUDENT PROFILE

Excerpts from the APS website

UTB undergraduate physics student Forrest Shriver grew up in the southernmost part of Texas and currently works with CGWA faculty member Volker Quetschke and is a member of the LIGO Scientific Collaboration. He is working with Field Programmable Gate Arrays (FPGAs), which are very useful for number-crunching and simulation.

In 2014 Forrest received a scholarship of $2,000 from the American Physical Society for physics majors at minority serving institutions.

RESEARCH HIGHLIGHTS

- **Sept. 2014:** Governor Rick Perry announced at the groundbreaking ceremony for SpaceX an investment of $9 million to UTB for the creation of STARGATE: a research center of excellence for the development of radio systems based on phased-array technology. It is led by Rick Jenet and involves CGWA faculty.
- **Oct. 2014:** Karen Martirosyan was awarded a patent titled “MRI Markers, Delivery and Extraction Systems, and Methods of Manufacture and use Thereof”. The patent, US 8,846,006 B2, is associated with cancer research. This work is in collaboration with the UT MD Anderson Cancer Center (Prof. Steven Frank) and is related to development of a novel, non-toxic cobalt-based contrast and imaging agents for use in enhanced medical imaging for therapeutic applications.
- **Dec. 2014:** Karen Martirosyan was awarded a DOD grant to install a cutting-edge commercial multi-functional instrument, a high resolution analytical Field Emission Scanning Electron Microscope (JSM-7100FA, JEOL) for $433,500 for one year.
- **Jan. 2015:** The CGWA received NSF funding of $400,000 to host the Research Experience for Undergraduates (REU) and Research Experience for Teachers (RET) programs for the next three years. The program is run by Robert Stone, Joey Shapiro Key is the PI on the grant, and the CGWA faculty advise the summer research projects.

UPCOMING EVENTS

- **Brownsville Science Cafe** – the first Monday of every month at 7:30 p.m. at El Hueso de Fraile in downtown. Three short talks by local and visiting experts on science, arts, and humanities topics, free and open to the public.
- **Monday Night Physics** – the third Monday of every month at 7 p.m. in Salón Cassia (Main 2.402) at UTB. Public talks on physics and astronomy topics, free and open to the public.
- **Astronomy in the Park** – the last Friday of every month at Resaca de la Palma State Park. Astronomy faculty, students, and telescopes are available for public viewing.
- **Physics and Astronomy Seminars** – every Friday at 1:45 p.m. in the Cavalry Hall conference room. Visit the department website for a schedule of speakers: phys.utb.edu/seminars
- **Hispanic Engineering, Science, and Technology Week** (HESTEC) - Oct. 4-10, 2015 with events at the UTRGV Brownsville campus including Latina Day, Educator Day, and student robotics competitions.
- **Rio Grande Science and Arts (RiSA) Festival** – Nov. 7, 2015 with events celebrating science and art in the Brownsville Mitte Cultural District.

RiSA
Rio Grande Science and Arts Festival

A NOTE FROM DIRECTOR DR. MARIO DIAZ

This is the last issue of the Ripples Newsletter that we print and distribute as faculty, scientists, staff, and students of The University of Texas at Brownsville.

We will be releasing our next issue as proud members of The University of Texas Rio Grande Valley, a new institution that will certainly transform our region.

Our center is entering now its twelfth year of activities. Many things have changed during this time. We strongly believe that these changes are all very good.

We have increased the numbers of students involved in our activities. We have seen the expansion of experimental activities that have resulted in state of the art material science and photonics and optics laboratories. We have also witnessed and been part of all the work of many, many scientists all over the world put into getting the new generation of Advanced detectors ready to start taking data by the end of this summer. The likelihood that in the next few years we will detect the first clear event is greater than ever before. We have expanded our efforts to have an optical astronomy program that will complement gravitational wave observations by following up on triggers from detectors with scanning of the areas of the sky where a potential counterpart could be seen.

The new UTRGV will also be part of one of the most exciting space ventures in the country: the creation of a spaceport in Brownsville. Our beloved "offspring" the Center for Advanced Radio Astronomy (CARA) will play a prominent role in this endeavor through the creation of STARGATE (Spacecraft Tracking and Astronomical Research into Giga-hertz Astrophysical Transient Emission).

We are looking forward to a truly exciting future.

UT BROWNSVILLE

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