

**Physics majors presenting research at conferences hosted  
by Lamar University, Rice University, and Baylor University:**

*The month of October 2015 was very busy for physics undergraduate students with several presentations on research projects developed under the STAIRSTEP and McNair programs and done over summer 2015. Their research was sponsored in part through the generosity of the ExxonMobil and OUR grants.*

**On October 3<sup>rd</sup>, four physics majors presented their summer research at 2015 STEM conference organized by the Office of Undergraduate Research at Lamar.** It was a great chance for three of our youngest researchers to give their first time talk in front of a broad audience, at home. Because any first appearance creates a bit of stress, our most experience UG researcher, Keeley Townley-Smith (a native from Canada, now living in Lumberton), a senior in physics/EE with two and half years of experience in STAIRSTEP and currently a McNair scholar has graciously assisted Mark (a native from Orange) and John (a native from Beaumont) to their talks on "Resolving the shape of a light source from polarization measurements" and "Identification of Chemical Composition of Medicines through Optical Analysis.", respectively.

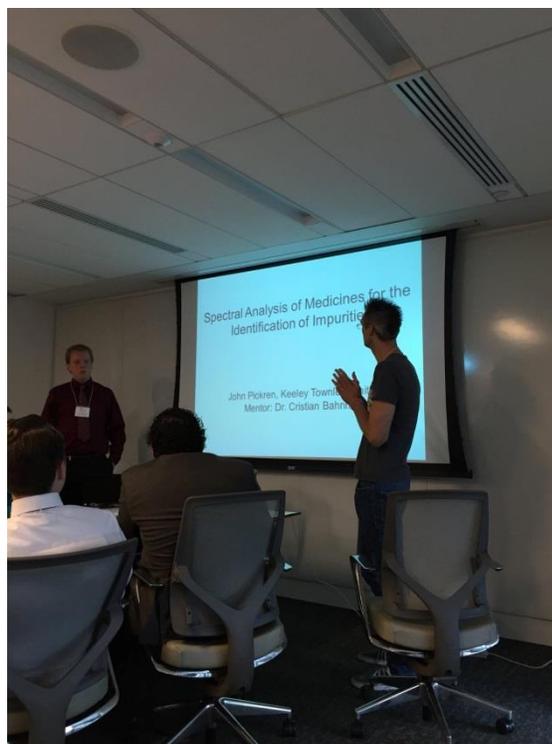
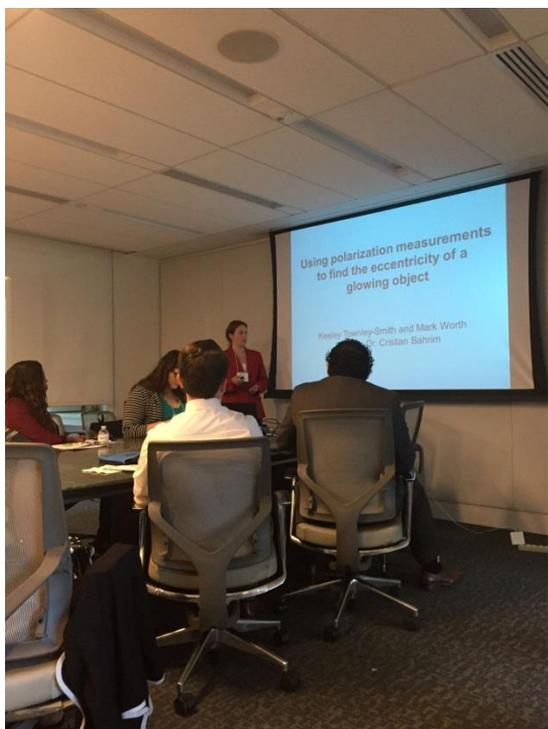


*Keeley Townley-Smith presenting at 2015 STEM Conference hosted by OUR at Lamar.*

“It was such a pleasure to present the research I had been working on the past year. It was also special to mentor both John and Mark in the presentation just like Sara-jeanne Vogler had done for me two years prior at the same conference.”, Keeley said. It is indeed how things started for Keeley two years ago, when she shadowed Sara in a talk about atomic spectra. This year, Keeley went for the second time to NIST for a summer internship for doing research in the field of atomic spectroscopy and also, run a successful OUR sponsored project on spectroscopy. Her success inspired John (a transfer student from Texas A&M and native of Beaumont) to walk on her footsteps and do research on a different topic within the atomic spectroscopy area. Here is John’s testimonial “Being able to present my research after months of experimentation was exciting and very nerve-wracking. However, because Keeley was helping me with my topic, I felt better about presenting.” It is worth to say that later in October, John has successfully secured an OUR grant on “spectroscopic Analysis of Medicines”.

At our 2015 STEM conference another talk was presented by Carlos Caballero (a native from Columbia, now leaving in Nederland, TX) on his McNair research project about air flow control systems and energy consumption in aeronautic industry. “It was great being able to present my research .... It was a great platform to showcase the quality of the work we do...”, Carlos said. This event greatly enriched our students experience (“The STEM conference was a great opportunity to present my research and to learn about research going on at Lamar.” Mark said). and encouraged some of them to move toward another conference setting.

**On October 17, The Gulf Coast Undergraduate Research Symposium (GCURS) was held on the Rice University campus in Houston.** Dr. C. Bahrim was invited to be judge for the talks given by undergraduate students. He used this opportunity to facilitate the participation of both John and Keeley, who each gave a talk.

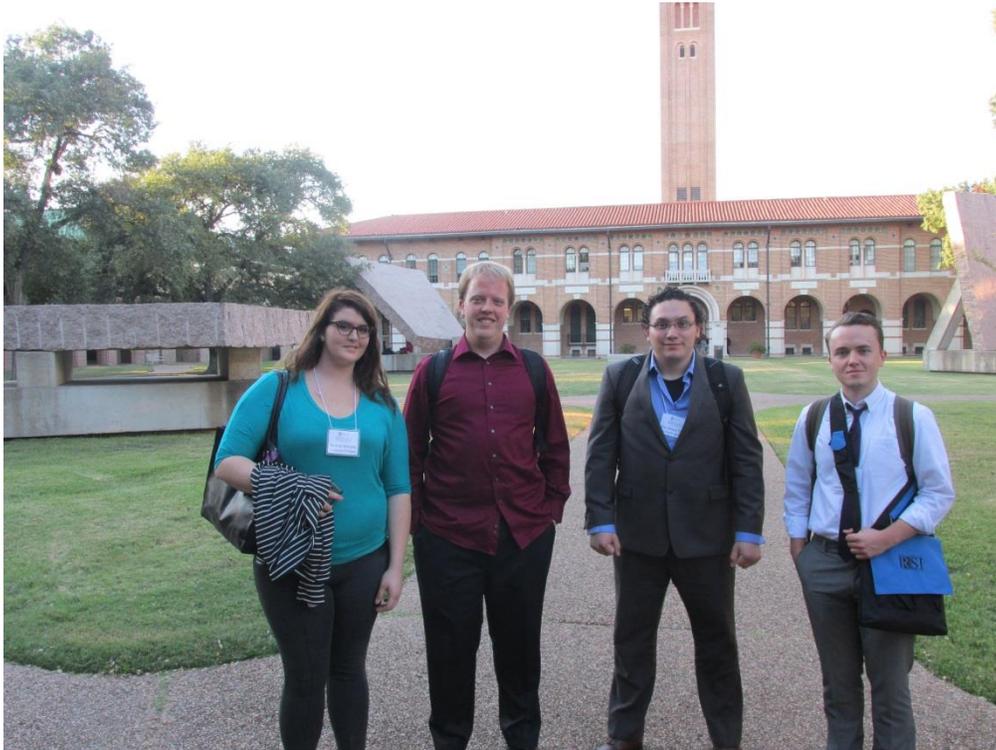


*Keeley (left) and John (right) giving talks at the GCURS symposium at Rice University.*

The symposium hosted only a selected dozen of students from Texas, Wyoming, Louisiana, and Oregon to give their talks. Among them, two talks were from Lamar (this is a very impressive performance by itself). “I had never been to Rice before so it was a real treat. During the morning, I listened to five talks in the physics track over cancer research, material science, and spectroscopy. During the break, Dr. Thomas Killian (Chair and Professor of Physics at Rice) showed us their state of the art physics lab where they do research with Bose-Einstein condensates.” As result of this visit, Dr. Killian said to Dr. Bahrim “I look forward to interacting with you and your program more in the future.” In spring 2016, we will have Dr. Killian visiting Lamar and presenting (as keynote speaker) his research on Bose-Einstein condensates at a physics conference which our Department of Physics will be hosting.

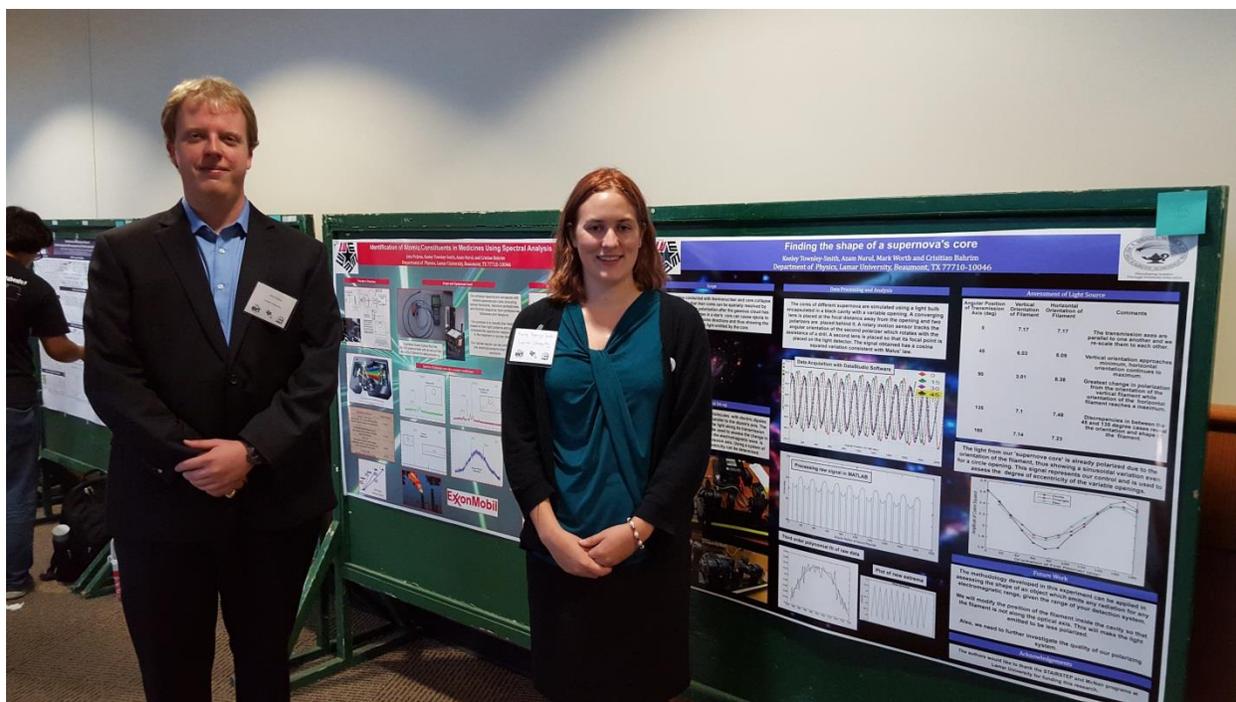
The experience was great for our students as well, Keeley said “I definitely consider Rice University for graduate school after my visit.” John’s reaction after the conference summarizes the great impact such setting creates in our students “At first the conference was very intimidating, being the first I have ever attended outside Lamar and presented at. But, it was

very exciting to be able to present my work to a group of incredible people and to learn more about the work that they do. After I realized that, the entire experience was fascinating to me, and I look forward to the next conferences that I attend.” This conference benefit of the presence of ten physics faculty at Rice, all judges along with Dr. Bahrim of the talks presented by undergraduate students.



*John (second from left) surrounded by, at right, Jose Dimas Valle from Texas A&M, Rex Yeigh from University of Wyoming and at left, by Kylean Murphy from University of Wyoming, in the quad of Rice University.*

**On October 29-31, Baylor University hosted the Joint Fall 2015 Meeting of the Texas Section AAPT, APS, and Zone 13 of the SPS, in Waco, TX.** John and Keeley presented posters in the Baylor Sciences Building, a state of the art facility completed in 2004. This is a professional physics conference with on outstanding attendance and guests from NIST, Princeton, UT Austin, CalTec, etc.)



*John (left) and Keeley (right) in front of their posters at the Joint Physics conference at Baylor University.*

John's testimonial summarizes the emotional aspect any undergraduate student typically experiences in such an outstanding company: "Being my second conference that I have attended with the STAIRSTEP program, I was more relaxed and confident with my subject matter that I was presenting. I presented a poster over my research and was very excited about it. However, attending the lectures was intimidating. The topics that most of the presenters were covering were extremely sophisticated for my current knowledge. It was very nice to be able to be exposed to this kind of information though. It helped broaden my knowledge of some areas that I had not known about before." Keeley's testimonial shows the complexity of the interactions a student presenter experiences to such a conference "At my poster titled "Finding the shape of a supernova's core" I had three undergraduate students, two graduate students, two faculty judges, and two other physics faculty stopped by and talked with me. This was the most interaction and interest I had ever had at a poster session at a physics conference. One of the judges, Dr. Jodi Cooley from Southern Methodist University, gave me her business card and told me to apply to their graduate program. I also attended the plenary talks and particularly enjoyed

the talk discussing Maxwell's demon and a new method proposed which could improve how to cool down atoms.” At the conference, Suzanne Wheeler (the newer addition to the physics STAIRSTEP program) and Azam Nurul (a graduate student), who participated in the research presented and Thomas Michel (who gave a talk at the Society of Physics Students’ session) completed our group from Lamar.



*Lamar’s undergraduate group including from right to left: Azam, Suzanne, John, Thomas, Keeley, along with Dr. C. Bahrim in the Science Building at Baylor University.*

In addition to presenting their research, our Lamar students also advertised the next APS/AAPT conference which will be organized at Lamar between March 31 and April 2, 2016. For this reason we set up a booth and advertised our school, Beaumont area, and the ongoing preparations for the greatest physics symposium ever hosted by Lamar. At this booth our students had the chance to network with many other students and faculty from various schools. Here is Suzanne’s testimonial “During the conference, we had a booth to promote that Lamar will hold the Spring 2016 joint meeting. At the booth, I had the opportunity to talk with both students and professors from many different universities in Texas. The chance to network with many different people in one day was extremely rewarding.”



*Lamar's booth at Baylor University promoting our school and our area.*

Azam Nurul's testimonial summarizes the overall complexity of this event "It was the first time that I went to an APS conference and indeed it was full of rewarding experiences. The plenary sessions conducted by leading researchers from renowned universities such as Marlan Scully affiliated to Baylor and Princeton, and outstanding presentations such as given by Jay Dittmann about "Penetrating the Particle Frontier in The Era of Precision Higgs Physics" and his research at The Large Hadron Collider at CERN Geneva for detecting the 'God's particle' (or Higgs boson) were great experience. Besides the plenary sessions, I attended several oral sessions where I've learnt a great deal about presenting research paper in front of scholar audiences. ...Alongside all the serious talks, Dr. James Kakalios from University of Minnesota and Author of the "The Physics of Superheroes" entertained us with a special lecture at the banquet. This was also a significant experience for me... I think this was also a great experience to meet new people and to buildup good communication with team members. I'm thankful to STAIRSTEP and Prof. Cristian Bahrim for the continuous support and guidance to achieve all this knowledge and experiences." Azam is a graduate student in the EE department, and native from Bangladesh.

*After Texas A&M (2014) and Baylor University (2015), the next conference will be hosted by Lamar. With a talented group of physics students and a strong group of faculty, the Department of Physics looks optimistically forward to hosting the Joint Spring 2016 Meeting of the Texas Sections of AAPT, APS, and Zone 13 of the SPS and making the event a success. After Lamar, the conference will be hosted by the New Mexico State University at Las Cruces (fall 2016) and UT Dallas (2017). This outstanding company indicates the significance of the event which the Department of Physics at Lamar will be hosting between March 31 and April 2. For more information about the event please visit our conference website [http://artssciences.lamar.edu/physics/tsaapt\\_tsaps/index.html](http://artssciences.lamar.edu/physics/tsaapt_tsaps/index.html).*