

Stories of our adventures

**OUTREACH,
OBSERVATORY EVENTS,
AND CONFERENCES**



**TWO SENIORS
MAY 2026**

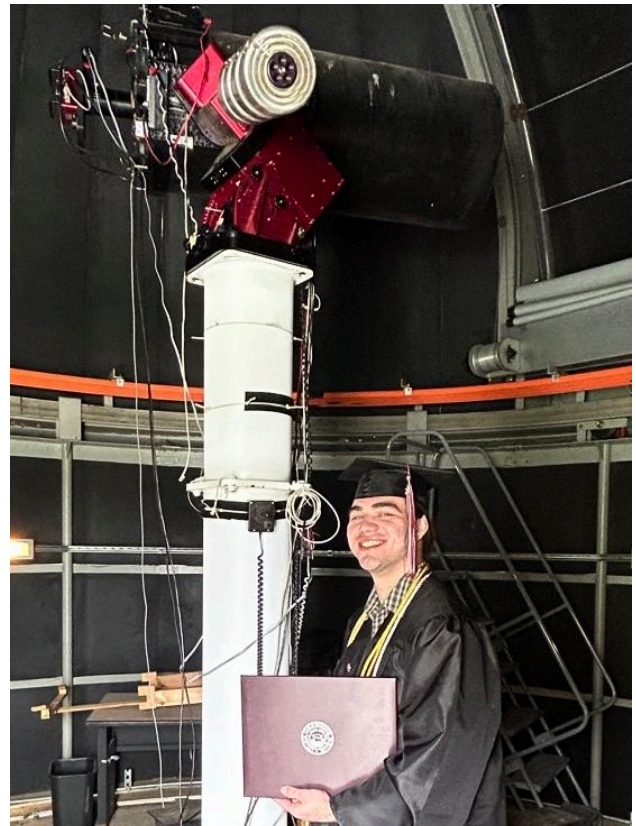


**NEW CLUBS AND OLD
STUDENT
ENGAGEMENT**



**PLEASE CONSIDER
DONATING TO THE
COLLEGE**

GUILFORD PHYSICS



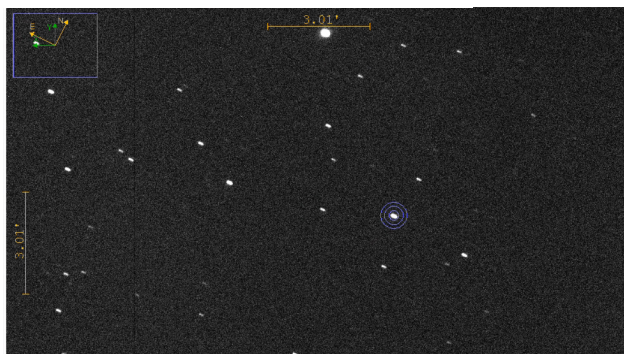
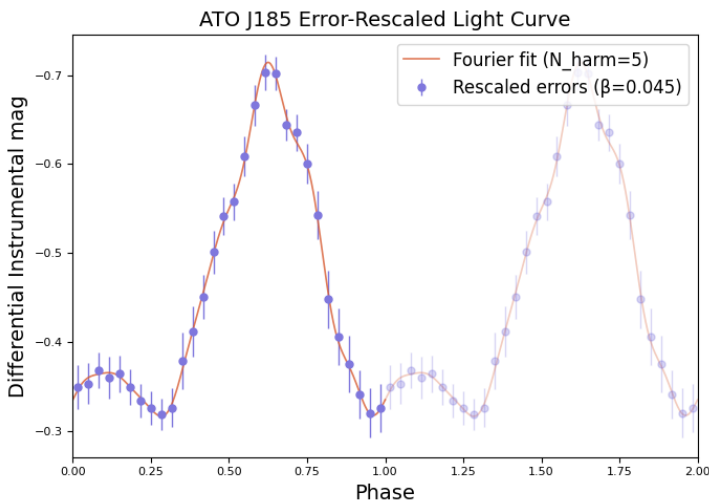
Highlights from 2025-2026

This was a year of innovation and development. We saw the Society of Physics Students reborn from the fallow pandemic years. We started an Astronomy Club to empower more students (and eventually community members, too) to use the telescopes. Details on these activities and more in the following pages! I also got access to the alumni gift records in the college finance system. Thank you so much to those who donated. I will be following up with individual thank you emails if I haven't already. Your generosity has enabled me to upgrade outdated equipment and replace broken materials, so next year's students will have an even better experience!

Meet our Students

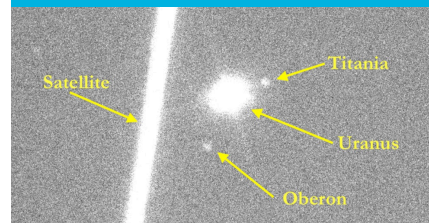
We had two graduating Seniors this year: *Isaac Cunningham* and *Nicholas Cleckler*. A third senior student, *Liliana Arias*, will graduate in December with a Physics minor (in addition to her Spanish major and Math and Chemistry minors!)

Isaac completed his senior thesis research in May of 2026, studying two variable stars with our 16" Cline Observatory telescope and publicly available data from the European Space Agency's Gaia satellite. Isaac writes, "The targets were a class of pulsating stars called RR Lyrae variables, which are old, low-mass stars that periodically expand and contract over the course of several hours, brightening and fading as they do. Because the relationship between their pulsation period, brightness, and chemical composition is well understood, measuring how bright they appear from Earth and combining that with Gaia's precise distance measurements should, in principle, allow their metal content to be determined without ever taking a spectrum. I collected nearly 2,000 images of my targets across a 61-night observing campaign." Isaac is continuing to deepen his analysis, as they hint at some tantalizing results that he doesn't want to give up on, even as he applies for teaching positions to start the next phase of his career.



Four Observatory Open Houses!

We hosted four observatory public viewing nights this year (we had to cancel one due to the freak snowstorm at the end of January!). In conjunction with Homecoming, Thom lectured about Uranus in September. In November, Don walked visitors up the distance ladder into space. In February, we switched up the order, inviting guests to the roof first to try to catch the planets at sunset (most of them were all lost in the glare, but we saw Jupiter and Uranus!) before Thom presented on recent JWST results.

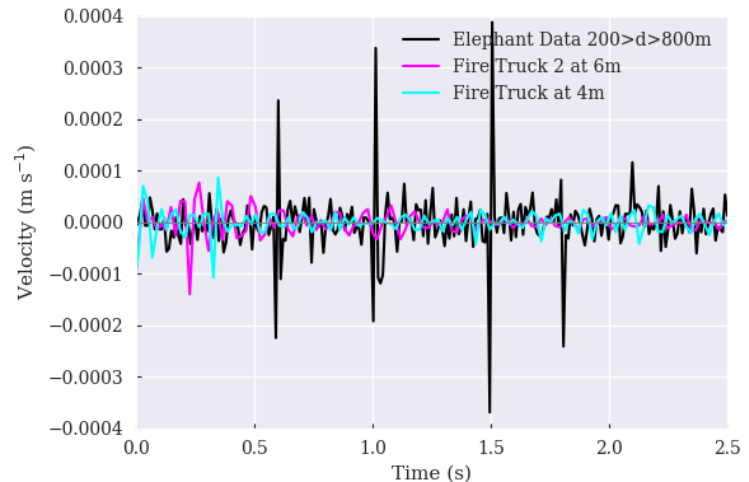


Finally, and as an emotional highlight, we hosted an event on the theme of the Artemis mission, while Artemis II was on its way back to Earth. After Don gave a short overview of human trips to the Moon, we switched to NASA's live feed and watched the splashdown — right on time at 8:07 EDT. It was a powerful moment to share as a community.

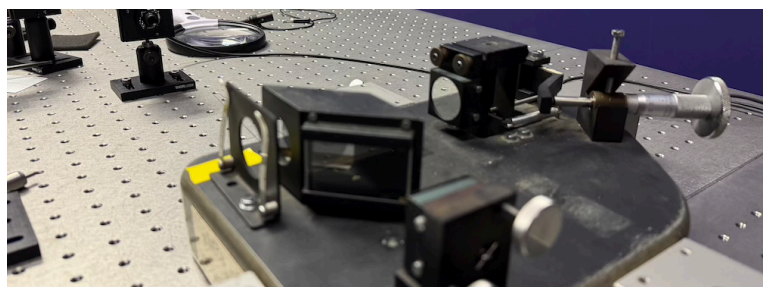


Meet our Students (cont.)

Nick developed a question based on his unique experience as a former employee of the North Carolina Zoo: it turns out elephants communicate through low frequency sounds emitted through the ground. Nick wondered if the presence of human-made sounds, such as traffic and construction noise, could be loud enough to interfere with the elephantine seismic waves? Although he was not able to carry out observations at the Zoo, he did design an apparatus, write the software, and carry out observations of vibrations produced by traffic on New Garden Road (observation location shown in left figure below). The good news is that neither the shape nor amplitude of the human sounds (colored lines in the plot) seem like they should interfere with the kinds of noises made by elephants (black line).



Liliana carried out an independent study in experimental physics. Her task was to take a classic experiment and pretend no one had ever done it before, stepping through the process of science from proposal to execution to publishing results. She chose as her experiment the Michelson Interferometer (image below). She very carefully aligned the mirrors and the laser, resulting in beautiful interference fringes (shown in image, left), and she designed her own Arduino-based counting apparatus, to observe how many bright and dark fringes moved past the detector when she moved one of the mirrors. She presented her project at the Guilford Undergraduate Symposium and sparked a lot of interest!



The Alumni Reunion is coming March 2027!!!!

Keep an eye out for a save the date announcement in July!

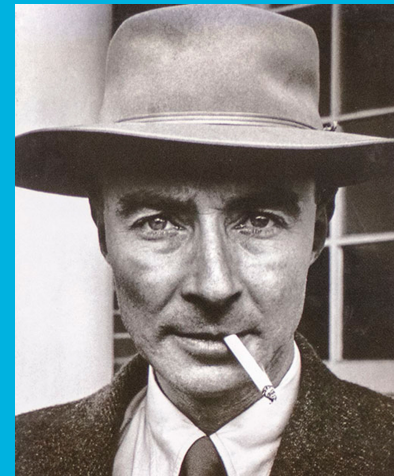
What our Faculty has done

Thom Espinola returned temporarily to full time this year to teach the algebra-based introductory sequence as well as two Astronomy courses. He says he's happy to have the focus of this newsletter be on others' achievements.

Don Smith taught Classical & Modern Physics 1 & 2, as well as two new courses. In Fall 2025, he taught an upper level course on waves. This course started with exploring the harmonic oscillator. Then we coupled that oscillator to a second oscillator and examined how they might behave together. Then we added more and more coupled oscillators, until we had derived all the major properties of waves from the symmetries of those simple systems. In the Spring, He offered a new course on "Light, Lenses, and Lasers" that encouraged the students to explore the properties of optics through completely experiential and hands-on activities. No lectures, just demonstrations and experiments. The image below shows preparation for an activity that asked them to observe absorption, reflection, and scattering by shining different colored lasers into different colored gummi bears. You can see the green light is absorbed, while the red shines through (as a bonus, the spot where all three lasers hit the bear looks white!). He is also continuing to improve his interactive eBook on Relativity theory, building on the basis of a brief text that Rex left behind.



Guilford Physics at the Movies!



On two separate evenings, the department hosted movie viewings projected on the planetarium dome of the Bryan Jr. Auditorium. Students, faculty, and friends enjoyed *Contact* (1997) and *Oppenheimer* (2023). Both films showcased impressive performances and visual effects, and they also inspired discussion among our attendees about the role of science in society and the ethics of discovery. We anticipate more collisions of art and science in the future!



The SPS is Back!

An update from the Society of Physics Students:

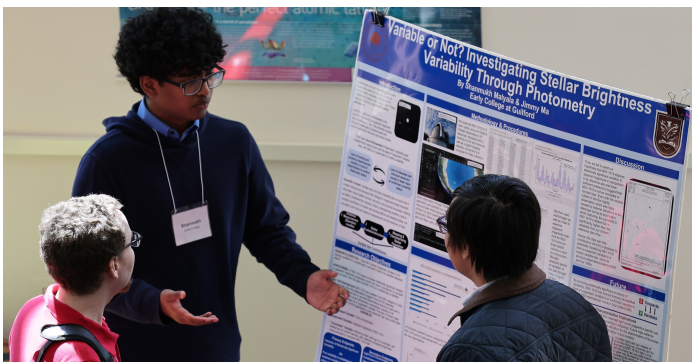
This past October, we were thrilled to start planning the revitalization of the Guilford College Society of Physics Students (SPS). Our mission from day one has been to foster a collaborative environment where students can explore physics theories and practical applications through hands-on research and community engagement. One of the absolute highs this year was taking our resources off-campus to host an interactive outreach workshop at the 2026 Brown Summit Middle School Phoenix Ignite Conference. During our “Magnetic Mayhem” event, throughout over 4 hours of sessions, we guided over 90 middle schoolers in building “Gauss machines:” magnetic linear accelerators that demonstrate momentum and potential energy in real time. Seeing their eyes light up as their accelerators launched steel balls across the room was a powerful reminder of why we restarted this chapter. Looking ahead for the summer and fall semester, we are excited to expand our footprint both on campus and in the community. We hope to have a Guilford SPS Physics Competition or Physics Leadership Camp for interested middle schoolers. Additionally, we are planning to partner with the Guilford Astronomy Club to work with the telescopes in the J Donald Cline Observatory. We want to line up a series of hands-on engineering challenges for the Guilford community, including bridge-building and egg-drop challenges. Beyond campus events, we also want to prepare and sign up for upcoming Physics Olympiads and send more members to next year’s NCSEF. We are incredibly grateful for the support of the Guilford physics department as we continue to grow!



A New Observatory Club

Last year Don began looking for ways to empower more people to use the J. Donald Cline Observatory on our roof. He asked the students if there were interested in forming an Astronomy Club, and they stepped up! Here is the summary one of the student leaders wrote about the club’s experiences in its first year:

We began informal and small, but our astronomy club has experienced significant growth this year. We are repairing the mount for our 10-inch telescope and carrying out variable star observations with the 16-inch telescope. We have drafted a club constitution to officially establish Astronomy as a Student Organization at Guilford for the upcoming year. To kick off our expansion, we will be establishing an official events calendar that features targeted community outreach, including booths at upcoming club fairs and interactive demonstrations at local middle schools. Furthermore, we will be actively leveraging connections within FTC robotics to secure meaningful sponsorships to help financially aid our club with equipment and other resources. Finally, we are



setting our sights on participation in the broader scientific community, with plans to potentially enlist club members in regional astronomy competitions and conferences such as the North Carolina Astronomers’ Meeting (NCAM) or the Astronomy Magazine Astrophotography Contest and hopefully contribute to star databases with publications such as AAVSO and/or SINBAD.

Ambitious goals, but don’t underestimate Guilford students! They have already presented the results of their variable star observation campaign at state science fairs as well as at the North Carolina section meeting of the American Association of Physics Teachers (see image). We look forward to what they will create next year!