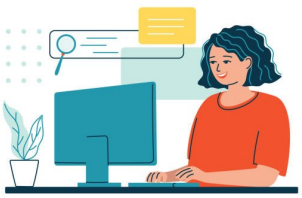
Spring, 2026

Issue 62

Long Island Physics Teachers Association Newsletter

Important Dates

AP/IB Physics Analysis	**Sat May 30**
New Regents Physics Exam	**Wed Jun 10**
Regents Physics Exam	**Thurs Jun 25**
End-of-year Celebration	**Mon Jun 29**



Check the LIPTA website *www.lipta.org* for any updated information.

President's Message

I love summer, and it's right around the corner. Truthfully, I'm happy to live on Long Island, where we get to enjoy all four seasons — each one arriving just when I'm ready for a change.

If you teach Regents Physics, you've probably been deeply immersed in the transition to the new curriculum, whether this was your first year teaching it or you're preparing for next year. If your students are among the brave pioneers taking the new exam this spring, I wish you the very best. And if your school is waiting until next year, we'll all benefit from what we learn from this year's first wave. Wherever you are in the curriculum cycle, summer is almost here, and that's something we can all appreciate.

For those staying local this summer, Long Island and New York offer plenty of opportunities to recharge while still feeding our inner science teacher. If you have little ones at home — or just need a good excuse to play — the **Long Island Children's Museum** is worth a visit. Its hands-on design-and-build activities are outstanding, and I'm convinced every museum bubble station since has borrowed inspiration from theirs.

Rainy day? Head to the **New York Hall of Science** in Queens or the **Hayden Planetarium** at the American Museum of Natural History. For a sunny afternoon, spend some time at Jones Beach and stop by the **Energy & Nature Center**. Be sure to check out the wind turbine blade display outside — it's a striking reminder of scale that could launch a dozen classroom discussions.

If summer means travel for you, there are plenty of physics-rich destinations to explore. Heading north to Buffalo? Bring your passport and visit the Canadian side of Niagara Falls. The tour behind the falls is unforgettable, and simply standing there, hearing the roar of that water, gives you a visceral sense of energy and power generation.

Traveling west? Don't miss San Francisco's **Exploratorium**, still one of the gold standards for hands-on science museums. Their motto, "Take your imagination out to play," feels like a perfect philosophy for science learning.

And if your adventures take you to South Dakota, beyond the history and gold rush of Deadwood lies Lead (pronounced "leed"), home to the western end of Fermilab's **Deep Underground Neutrino Experiment (DUNE)** — proof that world-class physics can happen in unexpected places.

There's so much to see and never enough time. However you spend your summer, I hope it brings rest, curiosity, and maybe even a little inspiration for the year ahead.

LIPTA Executive Board

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Gillian Winters, PhD
Stony Brook University
winters@lipta.org

Vice President
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Retired.
leacock@lipta.org

Recording Secretary
Diana Nigro
Mepham HS
nigro@lipta.org

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entwistle@lipta.org

Newsletter Editor
Terese Keogh
Retired
keogh@lipta.org

Physics Olympics
Justin King
Commack HS
king@lipta.org

Section Representative
Carissa Guiliano
Mineola HS
carissa@lipta.org

Web Wizard
Anthony Mangiacapre
Sacred Heart Academy
mangiacapre@lipta.org

At large
Harry Stuckey
Retired
stuckey@lipta.org

William B. Lynch
Retired
lynch@lipta.org

Richard Slesinski
Retired
slesinski@lipta.org

Sara Whitaker
Farmingdale HS
whitaker@lipta.org

John Gienau
Hicksville HS
gienau@lipta.org

Joseph Monroy
Herricks HS
monroy@lipta.org

Why Join AAPT?

by Carissa Giuliano

The American Association of Physics Teachers (AAPT) and LIPTA are two incredible physics organizations that are similar, yet distinct. Both are robust communities of physics educators offering specialized information, support, and a sense of camaraderie. AAPT outlines its unique benefits on their Explore the Benefits of Membership page. We at LIPTA are in a unique position since we already have an organization that offers many of these benefits. So, why should LIPTA members join AAPT?

As a member of both organizations, I have gained insight into their similarities and differences. The major benefit of AAPT is its national scale. Seeing how teachers in other states operate brings a fresh perspective and new ideas. Through AAPT, I have discovered new "noisy" PhET simulations, gained access to entire folders of medical physics and quantum resources, and learned about national trends in physics, to name just a few. I have also discovered and connected with AAPT's affiliates, including the Physics Teacher Education Coalition (PhysTEC) – from whom I am currently receiving a grant – and the Physics Teaching Resource Agents (PTRA). I personally have learned much of this from conferences, but travel is not necessary. AAPT also hosts virtual "Coffee Hours," which are one-hour discussions on various topics and trends in physics. Recent sessions have explored how gravitational waves connect to NGSS, the productive use of generative AI, and modern physics teaching resources.

Membership also brings financial perks, including conference discounts, member-exclusive grants and funding opportunities, and access to journals such as *The Physics Teacher.* Additionally, members can receive discounts on purchases such as car rentals, identity theft protection, and business supplies.

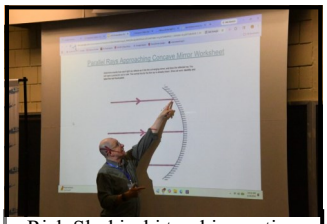
One last note is that AAPT is actively expanding its offerings for k-12 teachers. It has a k-12 Teaching Portal with teaching resources, funding ideas, Coffee Hour information, and student contests and competitions. In my opinion, LIPTA and AAPT both provide valuable opportunities and experiences, and they are different enough that it is unquestionably worth joining both!

2026 Spring Conference Highlights

by John Gienau

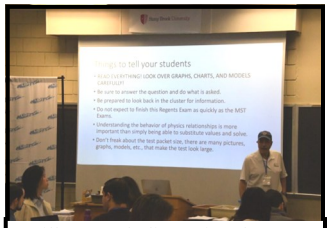
LIPTA hosted its Spring 2026 Conference on April 18th at Stony Brook University, bringing together over 40 educators from Long Island, New York City, and Westchester County. The day began with a homemade breakfast prepared by Treasurer Tania Entwistle, followed by a full schedule focused on NYSSLS/NGSS instruction, hands-on learning, and collaboration.

President Gillian Winters opened the event by outlining the day's agenda, welcoming a special visit from Physics Department Chairperson Dr. Chang Kee Jung, and introducing Rich Slesinski, who led the featured optics workshop. She also encouraged attendees to connect with Stony Brook physics students in attendance about careers in education.



Rich Sleskinski teaching optics.

With optics returning to the Regents curriculum for the first time in over 20 years, Rich's session supported teachers through an engaging, phenomenon-based approach. Using the ABC Method (Activity Before Content), participants explored reflection through hands-on investigations with mirrors, developed their own vocabulary definitions, and constructed ray diagrams for plane mirrors, curved mirrors, and lenses. Dr. Jung visited and reinforced the importance of making physics relatable, referencing real-world connections such as the physics behind elite soccer players.



Bill Leacock discussing the new exam.

The lightning round featured five brief presentations. Bill Leacock outlined expectations for the new Regents exam format, including 9–11 cluster questions and increased emphasis on modeling. Sara Whitaker shared strategies for writing clusters, highlighting the importance of real data, varied representations, and integrating prior content.
Peter Tsun engaged participants in origami-based STEM challenges, while Diana Nigro demonstrated a phenomenon-driven unit using a scene from *Gravity* to teach unbalanced forces. Joe Monroy emphasized purposeful annotation and reassured teachers that only a portion of cluster questions are calculation-based. Videos of all presentations will be posted on LIPTA's website.

The day concluded with an optional cluster-writing session led by Sara Whitaker, where teachers collaborated to design standards-based questions on topics such as dimming flashlights, toaster functions, and Artemis II. Overall, the conference provided valuable tools, strategies, and inspiration for implementing the new physics curriculum.

Navigating Change: Comments on Implementing the New Regents Curriculum

by Sara Whitaker

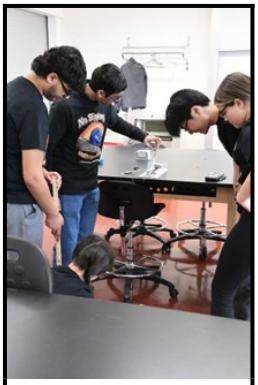
This year, Farmingdale High School transitioned to the new NYSSLS curriculum in the Regents Physics classrooms, which required a significant restructuring of our traditional timeline. We eliminated the friction formula ($F_f = \mu F_N$) and streamlined the modern physics unit to make room for an entirely new two-week unit on geometric optics, as well as topics on analog vs. digital signaling, the Big Bang theory, and the mandatory state lab investigations. To address the breadth of the new standards, we spent the entire first quarter grounding students in HS-PS2-1 (Forces and Motion), continually revisiting foundational mechanics concepts throughout the year to ensure that students retained them. Balancing these new topics alongside the investigations felt like a monumental task, but we are officially on track to complete the material. Although this year was chaotic, science is inherently messy—we are committed to learning from the challenges of this transition, streamlining our pacing, and returning with a much tighter timeline next year.

2026 Physics Olympics

by Justin King

The 40th annual Long Island Physics Olympics was held on Thursday, March 19th at Farmingdale State College, bringing together fourteen high schools from across Long Island for a day of competition, collaboration, and problem solving. Students competed in five events: Physics Bowl, Fermi Questions, Bowling for Glory, Crash Course, and Going Ballistic.

Roslyn High School earned first place overall with 51 points, followed by Great Neck North with 47.5 points. MacArthur High School finished third with 45 points, while Paul D. Schreiber High School claimed fourth place with 41 points. The competition remained close throughout the day, with several events decided by narrow margins.



Going Ballistic event

This year's events challenged students to apply physics concepts in creative and practical ways. In Going Ballistic, teams predicted where a projectile sphere would land after being struck by another rolling sphere, with Great Neck North taking first place. Riverhead earned top honors in Crash Course, where students analyzed the motion of constant-velocity cars to predict the location of a head-on collision. Bowling for Glory once again proved to be one of the day's most entertaining events, requiring teams to guide a bowling ball through a relay course using only a broom. MacArthur finished in first place in the event.

Crash Course event

Bowling for Glory event

In the fast-paced Physics Bowl, MacArthur also captured first place after a series of head-to-head rounds testing students' physics knowledge and problem-solving skills. Smithtown East won Fermi Questions, where teams estimated difficult quantities to the nearest order of magnitude, such as the number of ping pong balls required to fill the interior volume of the Empire State Building (10^{10}).

The Physics Olympics continues to be one of the highlights of the LIPTA calendar, giving students an opportunity to experience physics in a collaborative, hands-on, and competitive setting. LIPTA thanks the many teachers, judges, and volunteers whose efforts made this year's event a success, and we look forward to next year's competition.

If you are interested in becoming involved in the planning of next year's Physics Olympics, please contact Justin King at king@lipta.org. The planning committee will have its first meeting in late September or early October.

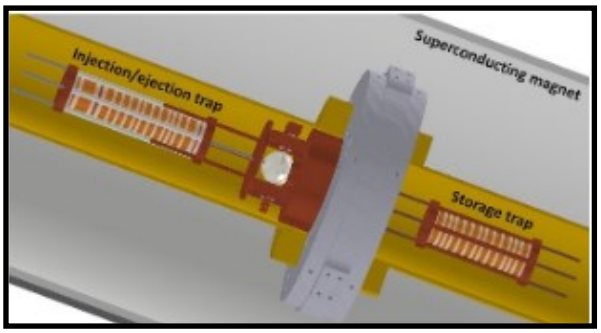
Did You Know …

by Harry Stuckey

In Dan Brown's 2000 thriller *Angels & Demons,* Illuminati terrorists stole a canister containing 0.125 grams of antimatter created by CERN's LHC. A portable, battery-powered vacuum trap held the antimatter suspended in a magnetic field, preventing it from touching matter and annihilating. The battery was designed to last 24 hours, after which the magnetic field collapsed allowing the antimatter to interact with normal matter and KA-BOOM!

Although theoretically possible, the technology to accomplish this feat did not exist in 2000. While CERN produces small amounts of antimatter in the form of antiprotons, it is estimated that producing the 0.125 gram from the story would take longer than the current age of the universe and require huge amounts of energy. The portable vacuum trap was just a pipedream, but that has recently changed. On March 24, CERN researchers transferred 92 antiprotons to a portable, electromagnetic trap cooled to -268^0 C inside a truck, drove 8 kilometers to another location in the lab, and delivered the trap with contents intact. This was part of the Baryon Antibaryon Symmetry Experiment (BASE), which compares the magnetic moments and charge-to-mass ratios of protons and antiprotons to look for differences that might explain the preponderance of matter in our universe.

BASE is located in CERN's "antimatter factory" where other equipment produces magnetic fluctuations that limit the precision of their measurements. The "antimatter factory" is currently the only facility in the world producing antiprotons, so to improve the measurements, antiprotons must be transported offsite to other laboratories. BASE had already devised a trap which could store antiprotons for over a year; transportation was the next step. Called BASE-STEP, the device consists of a Penning trap system inside the bore of a superconducting magnet that can withstand transport-related forces (see diagram). A Penning trap is an electromagnetic device used to confine charged antimatter particles in an ultrahigh vacuum to prevent annihilation with matter. The system also includes a liquid-helium cooling system that allows the device to be transported for several hours without external power for cooling. The Penning trap system uses one trap to receive and release antiprotons and a second trap to store them.



The device measures 1.9 meters long, 0.8 meters wide, and 1.6 meters high, and it weighs about 1,000 kilograms, allowing it to fit easily into a small truck or van. The next challenge is transferring the antiprotons to an experimental facility upon arrival without them vanishing—that is, annihilating—in the process. We probably should not expect to find antiprotons for sale on Amazon anytime soon, but the transportation system is well on its way.

Do you have any comments, information, or tips to share for future newsletters? Send it via email to: *keogh@lipta.org*

Guest Editorial

There's a mysterious phrase out there: federally funded research. What is it? Where do the funds go? And who benefits? I'll address these questions from the perspective of a scientist who's spent his career as a professor and in various leadership roles in several large, public, research-intensive universities.

So, what is federally funded scientific research? It's a critically important strategy that our society has invented for advancing humankind's understanding of the way the world – and everything it's made of – works. The discoveries and developments it inspires, made in universities and government laboratories across the nation, continue to endow us with astonishing capabilities to harness matter and energy in ways that, when used wisely, make our lives safer, healthier, more fulfilling, and more equitable. They undergird cell phones, GPS, and LASIK. They have given us PET scanners and cures for childhood cancers. They are protecting our credit cards from scammers. And through partnerships among industry, universities such as Stony Brook University, and national laboratories such as Brookhaven National Laboratory, they will bring us breathtaking quantum technologies.

So, where do the funds go? At universities, they cover part of the cost of conducting research. Primarily, this includes research equipment and facilities, research administration, and about 20% of the salaries of the faculty members who design, guide, and carry out the research. They also support the 21st-century version of apprenticeships for undergraduate, graduate, and postdoctoral researchers—the university-based, hands-on, cutting-edge training that prepares them to become the next generation of leaders in science, technology, engineering, mathematics, medicine, and more. These are the people who will bring us new levels of understanding and capability and help shape the future.

This federal investment is superbly leveraged. The universities lend their land, buildings, organizational frameworks (such as human resources), and educational culture and infrastructure to the mission. Plus, the universities typically cover roughly the other 80% of the salaries of the faculty research leaders. So, it really is a spectacular partnership. The nation gets excellent research done with great efficiency and little risk; university reputations rise; and faculty ambitions are realized. It's win-win-win for all: the universities, the government, and society.

Much of the research has evident societal benefits along the lines I've mentioned. But there's another important component. It's motivated not by immediate issues such as health or security, but by our natural curiosity as human beings. And it lifts our spirit to new heights. Think of the discovery of the Higgs particle or high-temperature superconductors, or the detection of ripples in the very space and time that we inhabit, born 1.3 billion years ago when two black holes merged out there in the Cosmos.

None of this would happen without the creativity and commitment of our physics teachers, who introduce young minds to the ideas of science, inspire curiosity, nurture talent, and launch the next generation of physicists. Thank you for all you do! And thank you for supporting federally funded research. It helps make the world a better place. And it can make your heart pound with joy.

Professor Paul M. Goldbart
Department of Physics and Astronomy
Stony Brook University

AP/IB Exam Review

Saturday, May 30

9am -12pm

NYIT Old Westbury

Harry J. Schure Hall Auditorium

Parking on the side and rear of the building.

More info at lipta.org

LIPTA End-of-Year Celebration

Monday, June 29

3PM-6PM

Free for all current LIPTA members.

This year will be a Potluck so please sign up to bring something to share with the other participants at www.lipta.org.

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This event will take place at a park in Brookhaven and specific location information will be emailed prior to the event to all registered persons.

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