

Andover High School students are Germany bound after win

Physics Club to perform experiment at laboratory

By Caitlin Dee

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ANDOVER — Andover High School students made a splash on the world stage recently after winning an international physics competition and being invited to a laboratory in Germany.

It all began at the start of the 2023-2024 school year when then-junior Richard Chen approached physics teacher Daniel Donovan with a lofty idea. Chen, a member of the Andover High School Physics Club, wanted to enter a group into Beamline for Schools, a challenging particle physics competition.

Donovan was supportive, but warned Chen that the physics necessary was above the level most participants had learned.

“Richard told me his idea for Beamline, and I was like ‘Wow, that’s great, it’s really a very hard competition, it’s some advanced physics. Don’t get your hopes up, because you’ve got a lot of good competition here and you guys have a lot to learn,’” Donovan said.

So, when Chen formed an eight-person team to compete, its members took stock of Donovan’s advice and began studying advanced materials.

“A lot of us have only taken one physical science course...none of us had that thorough of a background besides just picking up things here and there. So, actually going through all these scientific papers and getting a good enough understanding of them to construct an experiment and then understand it to be able to present it was also a really big challenge,” Andover High School junior Theo Buckridge said.

Yet, the team tackled the challenge head-on and gained an understanding of topics usually broached by people many years their senior.

“They were reading papers by groups of PhDs. They had to get access to scientific paper databases, they did a lot of independent research easily at the graduate level of physics,” Donovan said.

Using all their newfound knowledge, the group worked toward the competition’s requirement, a proposal for an

beamline diagnostics. Smith Purcell radiation is a type of light that’s emitted when fast traveling particles move closely parallel to something called a periodic diffraction,” Chen said.

So, the students submitted their proposed experiment with Chen as captain and named themselves “SPEEDers,” an acronym that stands for Smith Purcell effect emission determination.

Then, in May, the team received news that it was one of the competition’s three winners and earned the team a trip to Hamburg, Germany to test their experiment.

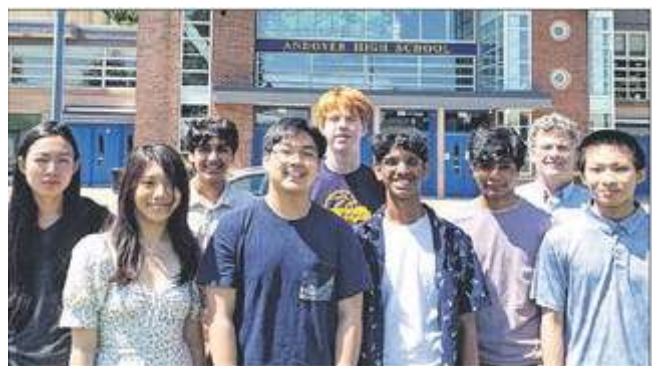
“When they told us, I think a couple of us screamed and we all hugged each other, it was very heartwarming,” Chen said.

While the accomplishment was celebrated locally, it also had national significance given the intensity of the competition.

“We were the third team from the United States to win this competition. It’s such a broad competition, it’s international and having the chance to win this competition and bring back what we learned is a very good way to expand student’s physics knowledge,” senior Samyak Jain said.

Now, the team is bound for Germany this September and excited for a unique two-week long learning experience that will serve Andover students in years to come.

“We definitely recognize that this is a very unique opportunity and we’re definitely planning on making the most of it by bringing back what we learned to the community of Andover,” Chen said.



experiment they wanted to perform as a part of a particle accelerator. However, this process was far from easy and many ideas were thrown out over the course of months.

“I think the most difficult part was just finding a suitable idea that fulfilled all of our different interests and concerns, because we went through a bunch of different ideas throughout our brainstorming process,” Chen said.

In March after months of deliberations, the team settled on the topic of Smith Purcell radiation for its entry.

“Our experiment is trying to use something called Smith Purcell radiation as a potential tool for

The Andover High School SPEEDers and teacher Daniel Donovan, winners of the Beamline for Schools competition.

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