

# Undergraduate Student Awards and Honors

## Valerie Lindner, Braddock Scholar: Unschooler, but Not Uneducated



Despite never having stepped foot in a formal school environment prior to taking college courses as a 14-year-old, **Valerie Lindner**, now a junior majoring in astronomy, mathematics, and physics, came to Penn State with nearly 80 college credits under her belt. How did this stellar science student manage to be so successful at a young age, despite no proper schooling?

Lindner's unique upbringing helps explain. Born in Saudi Arabia, and raised outside of Scranton, Pennsylvania, Lindner did not have a typical childhood. Her father, an American physician, and mother, of Armenian-Lebanese descent, did not formally edu-

cate their daughter. Linder was not enrolled in a traditional educational institution, nor was she homeschooled. Instead, she was a self-directed learner. "My parents did not set a curriculum for me or assign me homework of any sort. The choice of whether and what to learn was wholly mine. The only thing my parents did was provide me with unlimited access to a computer, the internet, video games, and books. And they happily answered any questions I had, of course," Lindner said.

For a lot of adolescents, not having to go to school would be a dream: they could have more time to play with toys and games, surf the Internet, and slack off. Not the case for Lindner, as she spent her time learning and acquiring skills: "I was always a voracious learner, and I was especially fascinated with science. I knew, from the start, that I was responsible for what I learned and who I would become. Since learning was something that I chose to do rather than something that was pushed on me, I developed a passion for knowledge and learning early on."

Although Lindner did spend

a significant amount of time playing educational video games and accessing the Internet, she did not behave as one would expect. "One of the most unusual things about my upbringing is that, since I live in a rather isolated area of Pennsylvania, I essentially grew up on the Internet. And I did so at a time when it was making libraries of knowledge freely accessible to any curious person. I spent hours every day reading about science and art and communicating with artists and writers on the Internet."

At 14, Lindner decided to enroll in college courses at Keystone College, a local community college, instead of attending high school. "I began with biology and basic algebra. I was immediately successful—in fact, I was the top student in every class, despite having never taken a class before in my life. After a few semesters, I started taking courses in chemistry, physics, calculus, history, and philosophy at the University of Scranton," Linder said. She then spent a semester at the Penn State Wilkes-Barre campus and obtained her GED the summer before attending University Park campus.

Deciding to attend Penn State was a careful choice for Lindner. She investigated Ivy League institutions alongside Penn State, and discovered that Penn State Science offered nearly identical opportunities for course offerings, faculty interests, and research areas. “Since coming to Penn State, I have become more impressed every year by the strength and diversity of Penn State’s faculty across the board in physics, astronomy, mathematics, and

has met or exceeded all of my expectations, and to this day, I count coming here as one of the best decisions I have ever made.”

Even though she is technically classified as a junior, Lindner is already taking senior-level electives and graduate courses. Additionally, she has been working independently on her research interests in theoretical physics, specifically in relativity, quantum mechanics, and quantum gravity.

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every other field of science and engineering,” said Lindner.

Penn State also offered Lindner a prestigious Braddock Scholarship, which is available to outstanding high-school seniors who are interested in studying science. “The deal was sealed when I and the other potential Braddock Scholars were invited to tour Penn State, and I simply fell in love with the campus (and the weekly physics colloquia, complete with cookies). Penn State

“I am particularly interested in the role of space in general relativity (GR) and cosmology. There are several phenomena in general relativity that can be mathematically formulated in terms of the motion of space itself, and this often results in intuitively satisfying explanations for the physical effects predicted by GR,” said Lindner.

While she is not working directly with a faculty member on her research, Lindner often

consults her professors for issues that she encounters. “My discussions with professors have definitely been the most rewarding part of studying at Penn State. I frequently stumble upon questions in physics or astronomy that I cannot find answers to in any textbook or paper, and very often I can get a satisfying answer—or at least learn a lot and get a nudge in the right direction—from a faculty member at Penn State.”

Outside of her academic interests, Lindner spends her free time drawing, painting, and writing science fiction. “I try to make my writing as scientifically plausible as possible, and in order to do so I’ve had to learn a lot about physics, chemistry, geology, engineering, and just about everything in the natural world. In summary, my interests in art, science fiction, and science mutually inspire one another.” She also devotes time to draw and discuss art with her younger sister.

After finishing her degrees at Penn State in 2016, Lindner plans to enroll in graduate school to obtain her Ph.D. in physics, and most likely pursue a career in academia. ■

—Tara Immel