

From Plovdiv to America: Biography of Ina Petkova

By Keso Kakachia

Class of 2024, Dartmouth College

Interviewee: Ina Petkova

Professor Ina Petkova is a renowned mathematics researcher and professor at Dartmouth College, who has made significant contributions to the field of low-dimensional topology and knot theory. She was born and raised in Bulgaria's second-largest city, Plovdiv, where she developed a fondness for mathematics. Even before she started school her mother took note of her interest in math and frequently created simple math puzzles for her to solve. With her mother's encouragement, she would eventually get past simple puzzles and go to compete in math contests and math olympiads.

Petkova attended a top English language high school where she learned German and Russian. She could hold rudimentary discussions in Russian despite not being fluent, but was fluent in German and could communicate in it well beyond a conversational level. Petkova was an active student who enjoyed sports, notably basketball, and rollerblading. She had a passion for the arts and participated in the art programs at her school.

Prior to learning about the financial alternatives accessible to international students from one of her friends, Petkova, who comes from a low-income family, had never considered going to college in the United States. She started preparing for the SAT and made the decision to apply to American liberal arts colleges. Since Amherst College's financial aid was need-blind for foreign students, she was able to study there after receiving an acceptance letter. Her mother's \$200 monthly income was less than the average for Bulgaria, so the financial support was quite useful to her. Petkova had to scrape together the money to purchase the plane ticket when she moved to the US with only \$500 in her pocket. In order to pay for her trips home during breaks Petkova got a job at the school's post office. This part-time job ended up being life-changing, as her boss there introduced her to ice skating. Petkova started skating at Amherst and continued while doing her PhD. at Columbia University.

Upon arriving at Amherst her plan was to combine computer science and visual arts, focusing on animation. But after enrolling in more math courses she began to take a deeper interest in the subject. Petkova was first exposed to the PUTNAM problem-solving seminar class at Amherst College, which intrigued her with difficult problems to consider. She ended up realizing math was what interested her most and that it was the best course of study for her.

As Petkova took more math classes her interest in the subject only expanded. She particularly enjoyed her graph theory lesson, piquing her interest in the field. Her interest in math eventually led her back to Europe with a math study abroad program in Budapest. Petkova intended to write a thesis on graph theory during her senior year, but Amherst did not have any instructors who were experts in that field. She made contact with Professor Ruth Haas at Smith College, located about 20 minutes from Amherst, and worked under her guidance to complete her thesis.

Petkova enrolled in the Columbia math program straight after completing her undergraduate degree at Amherst and developed an even deeper interest in the subject. During her time at Columbia, she became particularly interested in graph theory and low-dimensional topology, and she combined her love for graph theory with the visuals of geometry. Outside

academics, she also joined the Columbia women's ice hockey club team. Her passion and skill for ice hockey were so great she went on to play for the national team of Bulgaria several times, and today she primarily does coaching for ice hockey.

Going into her Ph.D., she felt underprepared compared to her fellow students who had come after taking advanced math classes or had already done their masters in Europe. Because of this, she had to put in a lot of work to catch up to them and fill in the gaps, but in the end, she completed her program and became a Doctor of Mathematics. She went on to do her postdoc at Rice University, where she kept teaching and did research. This gave her time to develop as a mathematician, and afterward, she worked at Columbia for a year before getting her current position at Dartmouth College.

In addition to being a superb mathematician, Petkova has other interests and pastimes. She enjoys playing the drums and has a set up in her basement. She owns a Honda Rebel 300 and enjoys riding motorcycles as well. She also enjoys playing golf in her free time. Petkova is a well-rounded individual who can balance all the different elements of her life, as evidenced by her love of math and her other interests and passions.

Petkova is aware that no project can ever be fully understood and that doing so can take years. She wakes up with a thought in her head every morning and it's a long, never-ending process. Petkova's personality is comfortable with that kind of mindset and she finds harmony with this way of thinking.

Petkova advises students who are interested in a career in mathematics to enjoy themselves and follow their passions. She advises enrolling in courses that make them happy and looking into various aspects of math to discover what appeals to them. She also emphasizes the significance of deadlines and time frames, which is a crucial strategic component in ensuring that one puts in the necessary effort. In order to excel in the subject of mathematics, Petkova emphasizes the importance of putting in the hours and being tenacious.

Overall, Professor Ina Petkova's story is one of passion, determination, and hard work. Many people find inspiration in her path from a little city in Bulgaria to become an accomplished mathematician in the United States. By combining her love of mathematics with her other interests and passions, Petkova demonstrates that it is possible to live a balanced life and achieve one's goals.

About the Author:

My name is Keso Kakachia and I'm a junior from Tbilisi, Georgia. At Dartmouth College, I study mathematics and economics. I'm interested in going to graduate school for economics, where I want to focus on studying the theoretical aspects of economics. My favorite mathematical area is Analysis and I'm looking forward to taking the Functional Analysis course next term. In my free time, I enjoy reading and playing board games. I also love traveling and meeting new people from all over the world.