Awards & Honors

Dmitry Vaintrob wins Siemens Competition

On December 4, 2006, former Clay Research Academy student Dmitry Vaintrob from Eugene, Oregon, won top honors in the 2006–07 Siemens Competition in Math, Science and Technology, the nation's premier high school science competition. The Siemens Competition, a signature program of the Siemens Foundation, is administered by the College Board. The awards were presented by U.S. Secretary of Education Margaret Spellings at New York University, host of the 2006–07 Siemens Competition national finals.

From left to right: Bettina von Siemens; Siemens Competition Individual Winner Dmitry Vaintrob; U.S. Secretary of Education Margaret Spellings; George Nolen, President and CEO of Siemens Corporation Academy. Photo courtesy the Siemens Foundation.

Dmitry won the $100,000 Grand Prize scholarship in the individual category for exciting research in a new area of mathematics called string topology. His mentor for the competition was MIT mathematics professor Pavel Etingof, who coached Dmitry over a session of the Clay Research Academy in 2004. Pavel shares his impressions of Dmitry and recounts how such a young student came to win such an honor:

"Mitka is an amazing mathematical talent. At 18, he knows as much mathematics as graduate students at good universities in the beginning or even middle of their graduate studies. He is extremely creative, and extraordinarily gifted. He was in my representation theory group in the 2004 Clay Research Academy and did extremely well. In the summer of 2006 Mitka worked on a project at the Research Science Institute at MIT, under the joint supervision of Aaron Tievsky (an MIT mathematics graduate student) and myself. This was the most sophisticated mathematical research project by a high school student that I have ever seen. I suggested it to Mitka in June 2006. The project was to calculate explicitly the Hochschild cohomology of the group algebra of the fundamental group of a closed oriented surface (as a Batalin-Vilkovisky algebra) in terms of a certain Lie algebra of loops introduced by Goldman. This project could have been a part of a Ph.D. thesis in our graduate program, and requires a deep knowledge of graduate-level topology. Normally it would have been insane to give such a project to a high school student. But knowing Mitka's exceptional talent and accomplishments, I decided to give it a try, and the results were even better than I had expected. Mitka not only gave a complete solution to the problem, but took the initiative to generalize it from the case of surfaces to the case of higher-dimensional closed aspherical manifolds. In this case, he found that the answer is expressible via the the so-called string topology of the manifold, introduced in 1999 by Moira Chas and Dennis Sullivan. Thus in his work Mitka obtained original results, which will no doubt be of considerable interest to experts working in the area and are publishable in a high quality mathematics journal. These are all reasons to expect that he will become a major research mathematician."

Dmitry attending Pavel's course at the 2004 Clay Research Academy.