Davidson Fellow
Nate Bottman
($25,000 Scholarship Recipient)

Personal Info
Nate Bottman
Age: 16
Seattle, Washington

School, College and Career Plans
Entering his junior year at the University of Washington, Nate will also study at the Independent University of Moscow through the Math in Moscow program. Nate is majoring in Mathematics and Applied Mathematics and plans to go to graduate school and become a mathematics professor.

Davidson Fellows Submission *(Mathematics)*
In his project, "Analytically Determining the Spectra of Solutions of the NLS," Nate determined the spectra of solutions for the Nonlinear Schrödinger Equation (NLS) that describes wave propagation in fluids and plasmas. He developed a general method for determining whether solutions of integrable equations are stable or unstable and proved that all stationary solutions of the defocusing NLS are spectrally stable. Nate's work has applications in predicting rogue waves, nonlinear optics, plasma physics, and the study of Bose-Einstein condensates.

Biography
Nate enrolled in the Transition School at the University of Washington in eighth grade and began taking college courses when he was 14. He is currently taking graduate-level courses mainly focusing on dynamical systems.

As a freshman, Nate became interested in rigorous math and knocked on doors at the University of Washington until he met his current mentor with whom he worked on his Davidson Fellows project. Nate's current research interests are inverse problems for electrical circuits.

Nate has presented his research at the International Association for Mathematics and Computers in Simulation Conference and the University of Washington Society for Industrial and Applied Mathematics chapter.

Nate enjoys learning Russian and watching Russian films, reading, cooking and playing tennis and hiking.

Please see next page.

Honors/Awards

- 2007 Davidson Fellow

- 2007 American Mathematical Society Math in Moscow Scholarship

- 2007 Outstanding Winner, Mathematical Contest in Modeling

- 2007 and 2006 University of Washington National Science Foundation program Vertical Integration of Research and Education in the Mathematical Sciences Grant winner

- 2006 University of Washington Freshman Medalist

- 2006-2007 University of Washington Mary Gates Research Fellowship

- National Merit Finalist

Community Activities

Nate enjoys tutoring students in math and was a teaching assistant at his alma mater Transition School. He currently meets with students weekly to work on math problems.

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