



**Natalia Toro**

**Intel Science Talent Search Winner 1999**

At age 14 Natalia Toro became the youngest first-place winner in the history of the Intel Science Talent Search (STS). Her project on the oscillation of neutrinos was based on an independent analysis of data collected at the Super-Kamiokande neutrino collector in Japan. Studies published in Japan had suggested neutrinos, subatomic particles, oscillate, making them invisible to a neutrino detector. Toro derived her own equations based on the Schrodinger equation to predict theoretical neutrino counts. Comparing these to the data from Japan, she found her results favored the neutrino oscillation hypothesis. In an interview following her achievement she commented, "I just put a lot of passion into it. If I'm going to do something, I give it my best, like this project. If it means I have to miss a few meals or some sleep, it's worth it to me to do as well as I possibly can. If you have passion and are willing to work hard, that's what gets you somewhere."

Toro entered high school at age 11 and supplemented her high school curriculum with physics, math and computer courses at the University of Colorado in Boulder. To honor her success at the Intel STS, the State of Colorado declared March 26, 1999 *Natalia Toro Day*.

"The impacts on my life from competing in the Intel STS are the self-confidence I gained by being a finalist and the intense experience of the competition week in D.C. The transition from student to scientist is one that I am still making, and will be for a long time to come, but the Intel STS helped me believe that I was capable of that transition."

Toro spent the summer of 2000 working at Los Alamos National Lab, checking calculations, writing code, and studying the effects of parity violation in the nucleus. According to her mentor at the lab, Anna Hayes, Toro wrote a sophisticated code that required her to master a number of nuclear physics concepts. While that may seem daunting to most 15-year-olds, for Toro it was a matter of following through on what intrigues her.

"Physics are beautiful. The ability to quantify the universe, to write down natural laws, it's always been something I've loved."

Today she is a senior at MIT majoring in physics and math, and doing her undergraduate thesis on lattice QCD calculations. Last year, along with 26 other MIT undergraduates, Toro was named a Burchard Scholar, which recognizes unusual ability and academic excellence. Over the summer she attended the Institute for Nuclear Theory's Research Experiences for Undergraduates program at the University of Washington where she studied the fractional quantum hall effect.

Along with all this, she still finds time for some non-academic reading and cooking, and is a member of *La Maison Francais* where students converse primarily in French. Her sense of humor is evident in the song she co-wrote with a friend, "Ode to the Neutrino," and in these lines from her personal web page: "Always try to change the world. If you can't, be amused by it."