

CWSF 2015 - Fredericton, New Brunswick



Anna Verkhovskaya, Quin Sykora

Balanced Homodyne Detector Laser Microphone

Challenge: Innovation

Category: Senior

Region: Calgary Youth

City: Calgary, AB

School: Western Canada Senior High School, Webber Academy

Abstract: A device that can measure the vibrations of a distant, diffusive surface was developed. Laser interferometry was used on a "balanced homodyne detector", which can measure light energies down to several photons. Discernible words were recorded from a white sheet of paper at ranges of up to 5m. Potential applications include heart rate detection at a distance and finding avalanche victims under the snow.

Biographies

Anna - Anna is currently a grade 11 student at Western Canada High School in Calgary. Her passions include contest mathematics, computer science, physics and horseback riding, specifically showjumping. Notable awards include 1st place in the 2014 Alberta High School Mathematics Competition part I and 3rd place in part II, 2nd place in the 2014 Iverson Computing Science Exam and a bronze medal at the 2013 CWSF. In March of 2014, she joined the Laboratory of Quantum Information Technology at the University of Calgary. This is where the 2015 CWSF project was developed and the head professor of which came up with the project idea. Anna plans on going in...

Quin - Quinlan is a student at Webber Academy in Calgary Alberta. He scored in the top 1% in the UBC Smith Challenge, and consistently ranks in the top 25% in math contests. He is also involved in debate and this year he and his partner ranked first in the provincial beginners high school debate competition, and in the top 40 in the Canadian national high school competition. He is part of the school's model united nations club, and is a member of its leadership committee. His plans for the future involve either attaining doctorate in quantum physics, or studying applied physics and tending towards engineering. Though he has not decided which univers...

Awards

Value

Excellence Award - Senior - Bronze Medal Sponsor: Youth Science Canada	
University of Ottawa Entrance Scholarship Senior Bronze Medallist - \$1000 Entrance Scholarship Sponsor: University of Ottawa	\$1 000
Western University Scholarship Bronze Medallist - \$1000 Entrance Scholarship Sponsor: Western University	\$1 000
Total	\$2 000