

# CWSF 2008 - Ottawa, Ontario



## Naomi Victoria Fredeen

### Fourier Analysis on Violin Tone

**Division:** International / None

**Category:** Senior

**Region:** Central Okanagan

**City:** Summerland, BC

**School:** Summerland Secondary

**Abstract:** I did Fourier analysis on several different violins to see if the harmonic patterns between violins were unique to each one. None of the differences were statistically significant. However, using a weight and pulley system to almost entirely eliminate human error, I managed to reduce the standard deviation on one of the violins to a minimum.

#### Biography

Living in Toronto for 11 years, I was involved in dance, music and school. When we moved out to Summerland, BC in the summer of 2002, I got involved in everything at school, including science fair, which I hadn't heard of before moving here. My science fair projects, starting with the first, have been steadily progressing up the science fair levels, with a silver at the regionals in Gr. 8, to a gold at the same place this year (Gr. 11). This year, having played the violin for about 5 years helped with my project. Testing violins for different sound wave patterns helped me to consolidate my different goals for the future. I hope to get into mechanical engineering at UBCO when I graduate, then do both engineering and music at UBC in Vancouver the year after. I also hope to do some major traveling, especially in Europe and Asia. Dancing, playing violin, flute, trumpet, piano, and guitar, and doing science fair is keeping my life busy. I look forward to science fair every year, and hope to go to the nationals next year for the last time before I graduate.

#### Awards

#### Value

The University of Western Ontario Scholarship Bronze Medallist - \$1000 Entrance Scholarship Sponsor: University of Western Ontario	\$1 000
University of Ottawa Entrance Scholarship Senior Bronze Medallist - \$1000 Entrance Scholarship Sponsor: University of Ottawa	\$1 000
Bronze Medal - Physical & Mathematical Sciences - Senior Sponsor: Encana Corporation	\$300
<b>Total</b>	<b>\$2 300</b>