

## 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 go to the nationals next year for the last time before I graduate.

#### Awards

#### Value

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