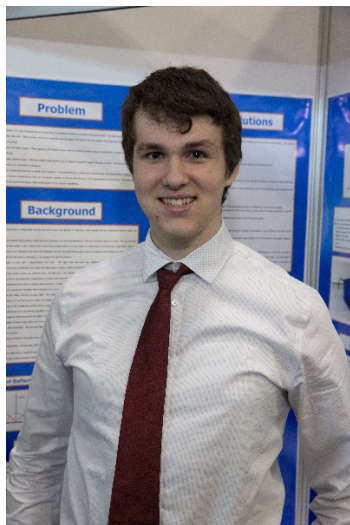


# CWSF 2019 - Fredericton, New Brunswick



## Zachary Fraser

### Laser Tuner: A Novel Approach to Pitch Detection on a Drumhead

**Challenge:** Innovation

**Category:** Senior

**Region:** Cape Breton

**City:** Sydney, NS

**School:** Sydney Academy

**Abstract:** Drum tuner that uses a reflected laser as a microphone with pinpoint accuracy. Shows what pitch the drum is at each tuning lug. This is a unique use for this technology, and can help be more precise when tuning the drums. It was developed for use with larger drums such as timpani, but works with most plastic-head drums. Very helpful for musicians and drummers.

#### Biography

Hi, my name is Zach, and I am a grade 11 student from Cape Breton, Nova Scotia. I'm passionate about music, especially percussion, and am very active in the music community in my city and Nova Scotia. I've even produced an Extended Playlist with a local ukulele group! I hope to go into engineering sciences and become an acoustical engineer. This is my second time at the national fair, and I am incredibly excited to be here again. It is a great opportunity, and really reminds me how amazing youth in Canada are. My project, The Laser Tuner, was inspired by my philosophy teacher who described a similar technology used for surveillance in the early 20th century. I just applied it to a relevant context: drum tuning. I hope to continue refining my project, and with some luck achieve a patent and develop a commercially viable tool. If you are interested in creating a project, I suggest reflecting on what you do on a daily or weekly basis. Often times there are things you do that could be improved. These can be great projects! Fun fact about me, I am also a black belt in Tae Kwon Do!

#### Awards

#### Value

Canadian Acoustical Association Award - Senior Sponsor: Canadian Acoustical Association	\$1 000
University of Toronto Engineering Award - Senior Sponsor: University of Toronto, Faculty of Applied Science & Engineering	\$3 000
<b>Total</b>	<b>\$4 000</b>