

# Benjamin Dyer | Curriculum Vitæ

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## Education

### University of Guelph

MASc Mechatronics and Environmental Engineering,  
Faculty of Engineering

**Guelph**

2019-present

### McMaster University

Hon. BSc. Physics,  
with Minors in Mathematics and Music

**Hamilton**

2014-2019

### M.M. Robinson High School

High School Diploma,

**Burlington**

2010-2014

## Experience

### AIR Labs, University of Guelph

Research Assistant (NSERC USRA position)

**Guelph**

Summer 2018

Development and Execution of Urban Microclimate Field Campaign

Duties:

- Testing, Characterization, Deployment, and Monitoring of Sonic Anemometers, SODAR, TANAB, and Thermocouples
- Development of high frequency, low cost data-loggers
- Cleaning and analysis of large data sets collected from instruments
- Collaboration with other group members
- Documenting and presenting work done to the rest of the research group

### McMaster Interdisciplinary Satellite Team

Thermal Team Lead

**Hamilton**

2016-2019

Thermal simulations and analysis of the NEUDOSE satellite in orbit, to be launched in Q1 2021.

Duties:

- Using programs such as Altium, COMSOL, and ESATAN-TMS
- Thermal analysis of all satellite components
- Guiding and distributing tasks to other team members
- Communicating with other team members and third parties
  - Working with Structural team to make necessary modifications
  - Working with Instrument team to ensure thermal limits are met
  - Working with software companies to obtain licences
- Interviewing and hiring new team members
- Writing official reports and presenting to NASA and the Canadian Space Agency
- Website: <http://mcmasterneudose.ca/about/>

**McMaster University****Hamilton***Teaching Assistant**2016-2018*

Teaching Assistant for Physics 1D03, *Introductory Mechanics*, and Physics 1E03, *Waves, Electricity, and Magnetic Fields*.

Duties:

- Running Labs
- Running Tutorials
  - Teaching students how to solve weekly problems
  - Marking quizzes and assignments
- Invigilating and marking midterms

**Tutor****Guelph***Private Tutor**2011-present*

Tutoring high school maths and sciences, as well as first and second year Math, Physics and Programming courses.

Duties:

- Keeping parents updated on how the student is progressing
- Developing learning plans based on student needs
- Teaching students
  - Explaining concepts that need reinforcement
  - Working through practice problems
  - Finding the best method to teach each student
- Running mock tests and exams

**McMaster Undergraduate Physics Society****Hamilton***President**2018-2019*

A voluntary student elected position held from May 2016-April 2018.

Duties:

- Running weekly meeting and getting updates from other Executives
- Setting up collaborations with other clubs
- Speaking with members and taking their suggestions
- Working to bring guest speakers in for colloquiums

**McMaster Undergraduate Physics Society****Hamilton***VP Finance**2016-2018*

A voluntary student elected position held from May 2016-April 2018.

Duties:

- Preparing the annual budget
- Applying for funding from the department, Science Society, and Student Union
  - keeping a ledger and collecting all purchase receipts
  - explaining the reasoning behind purchases
- Paying for events such as socials, general meetings, and academic initiatives
- Reimbursing members for purchases made for the society

## Computer skills

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**Languages:** C/C++, Python, Matlab, Maple

**Software:** Latex, COMSOL, ANSYS, ESATAN-TMS Space, Microsoft Office Suit, IgorPro

**Other:** GEANT4, CUDA, MPI, HPC, Gasoline2, Linux

## Interests

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**Music:** I play piano in my free time, mostly to perform for friends and family

**Electronics:** I have a few different side projects I am developing such as nixie tube clocks, sonic anemometers, and data-loggers

## Awards & Achievements

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- NSERC USRA recipient for Summer 2018
- Silver Medalist - Bay Area Science and Engineering Fair
- First place prize from The First Chapter of Burlington and Oakville Engineers
- Completed Class A First Aid/CPR

## Publications

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B. Dyer, T. Smith, A. Gadsden, and M. Biglarbegian. Filtering strategies for state estimation of omniwheel robots. *IEEE-ICMA*, oct 2020.

M. Moradi, B. Dyer, Manoy K Nambiar, Amir Nazem, Md. Rafsan Nahian, William D Lubitz, Amir A Aliabadi, and E. Scott Krayenhoff. A vertical diffusion model to predict profiles of temperature within the lower atmospheric surface layer: Simple or complicated? *CMSE-CFDSC Congress*, jun 2019.

M. Moradi, Benjamin Dyer, Amir Nazem, Manoy K. Nambiar, M. Rafsan Nahian, Bruno Bueno, Chris Mackey, Saeran Vasanthakumar, Negin Nazarian, E. Scott Krayenhoff, Leslie K Norford, and A. Aliabadi. The vertical city weather generator. Currently in discussion phase, to be finished December 3rd, oct 2019.