David Ayotte

Ph.D. student in Mathematics

Education

- **Ph.D. in Mathematics** 2019 – Today
  Concordia University, Montréal
  - Interests: Computational and arithmetic aspects of Drinfeld modular forms
  - Supervisor: Giovanni Rosso

- **M.A. in Mathematics** 2017 – 2019
  Université Laval, Québec
  - Interests: Number Theory, Modular forms, Class numbers
  - Supervisor: Antonio Lei

- **B.A. in Mathematics with honours** 2014 – 2017
  Université Laval, Québec

Programming and Software skills

- Programming: Python, Bash, LaTeX, C++
- Software: git, SageMath, PARI/GP, WeBWorK, Visual Studio Code, GNU/Linux, WSL2
- Github: `github.com/DavidAyotte`

Experiences

- **SageMath Developer** 2021 – Today
  Google Summer of Code (Summer 2021), Voluntary basis (since Fall 2021)
  - In summer 2021, I participated in the Google Summer of Code (GSoC) were I worked as a student programmer for the open-source mathematical software SageMath. I blogged about my experience on my website. I now work on a voluntary basis
  - My contributions includes: new enhancements (quasimodular forms), bug fixes and code reviews

- **Teaching assistant** 2016 – Today
  Université Laval and Concordia University
  - eConcordia teaching assistant involving answering questions on a forum, via email or Zoom
  - Assistant in two linear algebra courses, one advance algebra course (ring theory) and the math help center at ULaval

- **WeBWorK assistant** 2017 – 2019
  Université Laval, Québec
  - WeBWorK is an online homework delivery system allowing questions with randomely generated parameters with automated marking
  - I scripted (WeBWorK language, based on PERL) a number of questions (> 100) and assisted the students and professors in the usage of the platform

- **Sage Days 87 workshop: p-adics in Sage and the LMFDB**   July 2017 (1 week)
  University of Vermont, Burlington, USA
  - One-week workshop focused on developing specialized functionalities in the SageMath open source software
  - I learned the basics of the development process of SageMath (Reports, coding, testing and reviewing)

- **Undergraduate summer research projects**   Summer 2015, 2016 and 2017
  Université Laval, Québec
  - Carried out numerical calculation on different advanced math concepts such as the class number of cyclotomic fields and the symmetric square L-function of a modular form
  - Worked in collaboration with another researcher (Prof. Antonio Lei) and graduates students
  - Wrote a paper on properties of supersingular Weyl polynomials (summer 2015)
  - Programmed using specialized software in mathematics such as Maple and SageMath to obtain numerical results

Publications

- Ayotte D., *Relations entre le nombre de classes et les formes modulaires*, Master's thesis, 63 pages, 2019

- Ayotte D. and Lei A. and Rondy-Turcotte J.-C., *On the parity of supersingular Weil polynomials*, Archiv der Mathematik, 6 pages, February 2016.

Scholarships and Awards

– FRQNT Doctoral research scholarship . . . . 2020 to 2023
– Concordia School of Graduate Studies top-up funding 2020
– Teaching assistant scholarship of the Mathematics Department at U. Laval 2017
– Mention on the roll of honour of the Mathematics Department at U. Laval . . . . . 2016 and 2017
– NSERC undergraduate summer scholarship 2016
– FRQNT supplement to the NSERC undergraduate summer scholarship 2016
– ISM undergraduate summer scholarship 2015

Other Interests and Volunteering

- **Open Source Developer for SageMath (volunteering)**   2021 – Today
  Online
- **Member of the Club de Triathlon de l'Université Laval**   2016 – 2018
  Université Laval, Québec, Canada
- **Lifeguard for the Traversée Internationale du lac St-Jean (volunteering)**   2011 – 2015
  Roberval, Canada
- **Lifeguard and swimming instructor (paid work)**   2011 – 2014
  Roberval, Canada
- **Défi de la Fondation des Pompiers du Québec pour les Grands Brûlés**   2011
  Raise funds and bike from Saguenay (La Baie) to Roberval