

Fergus Horrobin
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EDUCATION **Bachelor of Science, Specialist, Physical and Mathematical Sciences**
University of Toronto Scarborough, Toronto, ON
Minor: Computer Science
Expected to graduate May 2020
CGPA: 3.97

TECHNICAL SKILLS Proficient in programming Fortran, C, C++ for parallel computing on CPU, GPU or Coprocessors (MICS). Developed a high performance parallel NBody code for the Intel Xeon Phi platform in Fortran with OpenMP and MPI. Working knowledge of scientific software such as Python, IDL and Matlab. Some experience with hardware design and assembly programming. Experience building and maintaining HPC cluster.

AWARDS

- UTSC Academic Travel Fund, November 2017
- Center for Planetary Sciences Undergraduate Research Fellowship, May 2017

CONFERENCES **Numerical Methods for Planet Disk Interactions (NUMPDI)**
UNAM, Cuernavaca, MX, Nov 2017

Title: Type 3 Planet Migration Studied with Large Scale NBody Simulations

Results and analysis of Type III planet migration based on simulations performed with a highly parallel NBody code I developed. I show the main features of this type of migration and how it differs from a fast Type I migration.

Toronto Meeting on Numerical Integration Methods in Planetary Science
UTSC, Aug 2017

Title: Numerical Simulations of Planet Migrations on CPU, MIC and GPU

Presented on high performance, parallel N-Body algorithm I developed for studying planet migration. Also presented preliminary results from migration simulations.

RESEARCH **Center for Planetary Science Undergraduate Research Fellow** Summer 2017

EXPERIENCE Working with Prof Pawel Artymowicz from the department of Physics and Astrophysics at UTSC on a research project on orbital mechanics and planet migration. I developed a high performance numerical simulation in Fortran, optimized to run on the Intel Xeon Phi platform to be able to test disks containing as many as 5 billion particles. Through numerical simulations and mathematical models, I have developed some additional mechanisms for the theory of Type III planetary migration.

TEACHING **Teaching Assistant: CSPA20 Introduction to Programming** Fall 2017

EXPERIENCE Facilitated 2 hour tutorial sessions each week for introductory programming course. Weekly activities consisted of additional lecture material and worked problem sets. Gained experience working with students of diverse background skill levels.

Introduction to Scientific Programming Seminars

Fall 2017

Designed and conducted weekly seminars teaching first year physics students introductory Python programming skills. Covered the basics of Python and scientific libraries such as Numpy, Scipy and Matplotlib as well as how to approach interesting problems from physics ranging from simple worked examples based on kinematics to NBody simulations of the solar system.

Physicd Aid Center (PAC) Tutor

Fall 2017

Helped first year stidents in PHYA10 and PHYA11 work through problems. Was available 3 hours per week throughout the semester.

Tutoring Introductory Physics and Chemistry

Summer 2017

Provided approximately 2 hours per week of tutoring service to 2 students at UTSC in PHYA21 and CHMA11. Helped to develope necessary mathematical background and problem solving skills to succeed in the courses.

REFERENCES**Professor Pawel Artymowicz**

Professor of Phycis and Astrophysics

Research Supervisor for Summer 2017 Research Fellowship
Department of Physical and Environmental Sciences
University of Toronto Scarborough, Toronto, ON
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Professor Anna Bretscher

Professor of Computer Science

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