

Ahmed Shalabi

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EDUCATION

2015 – PRESENT **Candidate for Bachelor of Science in Mathematical Physics**

University of Waterloo
Department of Physics and Astronomy

RESEARCH EXPERIENCE

Honours Research Project

UNIVERSITY OF WATERLOO

DEPARTMENT OF PHYSICS AND ASTRONOMY

SEPTEMBER 2019 – DECEMBER 2019

Currently researching entanglement harvesting between two qubit-like detectors on flat and curved AdS spacetimes due to vacuum fluctuations with Dr. Mann. My work involves seeing if the no go theorem for delta switching holds in cavities in flat space and conformally map the results to AdS.

Research Assistant

UNIVERSITY OF WATERLOO

INSTITUTE OF QUANTUM COMPUTING

MAY 2019 – SEPTEMBER 2019

Research in quantum computation with trapped ions and open quantum dynamics in Dr. Senko's lab in the IQC. Designed and helped align mechanical parts for the 24 W laser for Raman transitions in the group's ion trap. Numerically simulated and quantified the impact of the heating of the phonon modes of the linear chain of ions in the trap on the fidelity of the group's proposed 2 qudit entangling gate.

Research Assistant

UNIVERSITY OF WATERLOO

DEPARTMENT OF APPLIED MATHEMATICS

SEPTEMBER 2018 – DECEMBER 2018

Research in electrochemistry and nanophysics of Graphene based FET sensors with Dr. Miskovic in the Applied Math Department. numerically studied the effects of Dielectric saturation and decrement in electrolytes on the electrochemistry of metallic and Graphene conductors. Developed and implemented a computational procedure to calculate the differential capacitance of Graphene based chemical FET sensors in ionic liquid electrolytes.

Research Analyst

THE HOSPITAL FOR SICK CHILDREN

DEPARTMENT OF DIAGNOSTIC IMAGING

JANUARY 2018 – APRIL 2018

Research and software development for medical research for the department of diagnostic imaging at Sick Kids. Developed a Matlab pipeline for the segmentation and separation of visceral and subcutaneous fat in abdominal CT images for research into pediatric fatty liver disease and hepatic steatosis. Researched, developed and did statistical analysis on a new segmentation method in Matlab for volume quantification of Wilms tumor in CT images using Level Set Methods for research into the response of the tumor to therapy protocols.

Research Assistant/Bioinformatician

CENTER FOR ADDICTION AND MENTAL HEALTH

KREMBIL FAMILY EPIGENETICS LABORATORY

SEPTEMBER 2017 – DECEMBER 2017

Research and data analysis on Epigenomic sequencing results for the Krembil Family research group in CAMH. Implemented an analysis pipeline to efficiently study the concentrations of dominant sequences in Bisulfite Epigenomic data. Conducted a statistical analysis on the effects and the behavior of the current PCR deduplication method in the methylation pipeline to discover hypo-methylation artifacts in the group's sequencing runs.

AWARDS & SCHOLARSHIPS

- 2016-2018 **Dean's Honour List**
Awarded for 80% Term average
- 2015 **President's Distinction Scholarship**
Awarded for 95% + Entrance Average

PUBLICATIONS

Published

- JULY 2019 *Differential capacitance of ionic liquid interface with graphene: The effects of correlation and finite size of ions*
A. Shalabi, L. Daniels, M. Scott, Z. Miskovic
- SEPTEMBER 2018 *Hepatic steatosis is highly prevalent across the paediatric age spectrum, including in pre-school age children*
J Dhaliwal, GB Chavhan, E Lurz, **A Shalabi**, N Yuen, B Williams, I Martincevic, A Amirabadi, PW Wales, W Lee, SC Ling, M Mouzaki

CONFERENCE PRESENTATIONS

- AUGUST 2019 *AMMCS 2019 at Wilfred Laurier University, Waterloo ON, Canada*
Differential Capacitance of Ionic Liquid Interface with Graphene

COMPUTATIONAL SKILLS

- LANGUAGES Python, MATLAB, Maple, R, PERL
- SOFTWARE AND TOOLS Linux, Bash, Git, LaTeX
- CONCEPTS Computational Physics, Data Analysis, Unsupervised learning, Neural Networks