# Hao Zhang

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## Education Background

**09/2020-Present**   **MAS.c   Electrical & Computer Engineering, University of Victoria**
Research student of Nanoplasmonics Research Lab
Quantum BC Scholar   Overall GPA: 4.0/4.0   Rank: 1%

**09/2020-Present**   **MAS.c   Electrical & Computer Engineering, University of British Columbia**
Visiting student (Quantum Computing) A

**08/2016-06/2020**   **B.S.c   School of Microelectronics, Tianjin University**
 Major:   Integrated Circuit Design and Integrated System
Overall GPA: 3.2/4.0   Rank 8/29

## Summary

- Student Member of IEEE, Optica and SPIE. Have four-year experience of RA/TA. Interested in Quantum Computing (QC) and quantum circuit (superconducting/ion-trap), nano-plasmonic and quantum optics.

## Awards and Publications

- University of Victoria Graduate Award (2020-2021)
- Quantum Computing NSERC CREATE program scholarship (2021-2023)
- *Design of a Compact SISL BPF With SEMCP for 5G Sub-6 GHz Bands (MWCL, IEEE)* *(https://doi.org/10.1109/LMWC.2020.3030189 (DOI: 10.1109/LMWC.2020.3030189)*
- *A Novel Self-Packaged DBBPF With Multiple TZs for 5G Applications* (*TCAS-II, IEEE).* (Awaiting Recommendation)
- China College Students Integrated Circuit Innovation and Entrepreneurship Competition (The North of China), First Prize (Top 1 of 140, lead, 2019)
- China College Students Integrated Circuit Innovation and Entrepreneurship Competition (Final), Second Prize (Top 20 of 1300, lead, 2019)
- 2017 IEEE UBTECH-Education Robotics Design Challenge in China, Silver Award (Top 5 of 800, lead)
- IEEE-UPP Student Branch Award in China (2017-2018, 2018-2019) (Chairman)
- 2019-2020 "Merit Student" of Tianjin University Scholarship

## Research and Internship Experiences

**10/2020- Present   Nanoplasmonics Research Lab**
**Member of Centre for Advanced Materials and Related Technology (CAMTEC, UVic)**
**Research Assistant and Teaching Assistant**

- Studying nano-plasmonics and quantum optics under the guidance of Dr. Reuven Gordon. I worked on the second harmonic generation (SHG) and quantum tunneling effect for laser applications, Dicke Superfluorescence (SF) from $Yb3+$ nanoparticles and the single/double quantum dots ($CsPbBr_3$) trapping by using optical tweezers (Double Nanoholes). I have participated in and completed the QC-CREATE program to learning quantum computation and information theories.

- Working on the single quasi-qubit superconducting circuit (based on Transmon) design by using Qiskit Metal, HFSS and L-edit

**07/2021- 01/2022      Ansys R&D group (Lumerical, Canada)**

**R&D intern**

- We developed an automated workflow for the extraction of compact models from physical simulation of MOSFETs that can be fabricated using CMOS-compatible processes. The compact model can accurately reproduce the simulated behavior of the physical device and is suitable for integration into EM and thermal simulations. I was responsible for creating and validating simulation studies of the physical models that are necessary to characterize the n-MOSFET using Ansys tools for charge transport and electromagnetic modeling. I created suitable compact models in SPICE to represent the electronic, RF and thermal response of the transistor, and implement a workflow to extract compact model parameters from the physical device simulations.

**09/2018- 05/2020      Interconnection Perception Microelectronics Laboratory of Tianjin University**

**Research Assistant**

- Undertaking an Innovative Project for College Students in the Laboratory (**the Excellent project in Province, 1%**). The project is to design a Self-Packaged dual bandpass filter with multiple transmission zeros for 5G sub-6 GHz applications. I proposed a dual bandpass filter with multiple and controllable transmission zeros (TZs), based on the Substrate Integrated Suspended Line (SISL) technology. The filter introduced six TZs, which improved the isolation greatly. In this project, two types of DBBPF are designed.
- As a research assistant in the IC research group of Heterogeneous Integration Technology of IC Design of Tianjin Research Institute, China.

**06/2017- 05/2018      Innovation and Entrepreneurship Lab, Department of Intelligent Computing Science, Tianjin University**

- Coding for programs relating to Computer Vision Recognitions (by Python and OpenCV) for robots and simple sensors controlling in the related competitions. We made a Rubik Cube Robot which can solve a random Rubik cube in 60 secs. Designing Weather Detection Robot (detect the weather changing and predict weather information by using deep learning/TensorFlow) with teammates.

## Leadership Experience

**11/2020-Present      Optica/SPIE Student Chapter in University of Victoria**

**Treasure**

**11/2017-09/2019      IEEE Student Branch of Tianjin University**

**Chairman of Student Branch**

- Holding the 14th and 15th Robot Competitions together with the Science and Technology Association.
- Holding series lectures and Competitions.
- Achieved the Outstanding student branch award of IEEE (China section) in 2018 and 2019.

**09/2017-06/2018      Dawn Innovation Laboratory, Innovation and Entrepreneurship Science and Technology Association of Tianjin University**

**Teaching Assistant Lead**

- Leading a group to teach the students about the ability to use the Micro Control System such as Arduino and Raspberry PI 3B. Helping students who want to participate in competitions by using Raspberry PI 3B.
- Demonstrating basic skills with Apple Products for teaching and learning for about 80 students for 30 hours. I was awarded the **"Apple Teacher"** by Apple Vice President of Education.

## Skills

- Operation System: MS Windows, Linux OS, MAC OS
- Software: MS Office, ADS, Auto-CAD, HFSS, CST, MATLAB, Lumerical, L-edit, Git, Qiskit
- Tool Language: Python, Swift, Verilog, SPICE, LaTeX