

# Michael F. Zhang

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Graduation Date **May 2021**  
Citizenship **U.S. Citizen**

Physicist • Programmer • Writer • Explainer • Creative Thinker • Problem-Solver • Layman Philosopher

## Goal & Objective

Accumulate and expand my knowledge through Physics research and internships, ultimately to pursue a Theoretical Physics PhD.

## Educational Background

**University of Illinois Urbana-Champaign** • Champaign, IL • U1 Freshman 2017-present • LAS Physics • 4.0 GPA  
**Naperville North High School** • Naperville, IL • Class of 2017

## Relevant Courses

**College** • Phys 401 (current) • Phys 325 (current) • Phys 225 • CS 125 • Math 241 • Math 285 • Math 347 (current) • Math 416 (current)  
**High School** • AP Computer Science A • AP Physics C: Electricity and Magnetism • AP Physics C: Mechanics • AP Calculus BC • AP Physics 2 • AP Chemistry • AP Physics 1 • AP English Language and Composition • AP English Literature and Composition • AP Biology • AP United States Government and Politics

## Acquired Skills

**Programming Languages** • Python (experienced) • Java (business) • LaTeX (business) • JavaScript (basic) • HTTP (basic) • CSS (basic)  
**Data Analysis** • OriginPro (business) • Microsoft Excel (experienced)  
**Report Writing** • Transients and Oscillations in RLC Circuits (Phys 401) • Frequency Domain Analysis of Linear Circuits Using Synchronous Detection (Phys 401) • Pulses in Transmission Lines (Phys 401)

## Honors & Achievements

- MultiPlan, Inc. Scholarship 2017-2018
- Village of Woodridge/ProLogis Foundation Scholarship 2017-2018
- National Merit Commended Student 2016-2017
- National AP Scholar 2017
- Illinois State Scholar 2017-2018
- AP Scholar with Distinction 2015-2017
- Naperville North High School Distinguished Honor Roll 2013-2017
- Dean's List Fall 2017
- Science Olympiad Varsity Chemistry 3rd place medalist 2016
- Science Olympiad Varsity Astronomy 5th place medalist 2016

## Experience & Leadership

### Self-Learning Topics in Theoretical Physics

Woodridge, IL • Urbana, IL

- Studying from *Theoretical Physics* (3rd ed.) written by Georg Joos.
- Have learned: "Vector Analysis", "Mathematical Representation of Periodic Phenomena".
- Currently Learning: "Combination of Vibrations along different Axes. Lissajous' Figures".

June 2017 - present

### Self-Learnt Differential Equations

Woodridge, IL

- Studied from *Elementary Differential Equations and Boundary Value Problems* (10th ed.) textbook over 2017 winter break.
- Earned credit for Math 285 at University of Illinois Urbana-Champaign.
- Expert at applying differential equation knowledge.

December 2017 - January 2017

### Service Desk Analyst Intern at MultiPlan, Inc.

Naperville, IL

- Handled and processed tickets initiated by healthcare professionals and their respective clients.
- Completed a project that enabled MultiPlan, Inc. to comply with mandatory regulations.
- Made suggestions for increasing the efficacy of certain tasks. Currently in the process of implementation.
- Presented to the CIO Michael Kim, CTO Barry Roelofs, and various managers in the Information Technology department of MultiPlan, Inc.

June 2017 - August 2017

### First Class Leader at Naperville North High School

Naperville, IL

- Led students through activities and provided strategies for coping with school.
- Educated peers about issues faced by students such as drug abuse, mental illness, and bullying.
- Provided support and help for those facing such issues.

August 2015 - May 2017

### **Vice President of Badminton Club at Naperville North High School**

*August 2016 - May 2017*

*Naperville, IL*

- Led students through activities and provided strategies for coping with school.
- Educated peers about issues faced by students such as drug abuse, mental illness, and bullying.
- Provided support and help for those facing such issues.

### **Internship at The Advanced Photon Source at Argonne National Laboratory**

*July 2016 - August 2016*

*Lemont, IL*

- Collaborated with Sector 16: High Pressure Collaborative Access Team under the leadership of Dr. Guoyin Shen to create a Python program necessary for conducting experiments with precision using a high-powered laser.
- Program currently used by beamline scientists to perform experiments probing the structure and properties of new materials.
- Learned the theoretical underpinnings of the experiments at The Advanced Photon Source.
- Participated in weekly meetings, which exposed the stages of research and scientific discovery.

### **Peer Tutor at Naperville North High School**

*January 2016 - May 2016*

*Naperville, IL*

- Tutored peers one-on-one in various subjects in an established school program.
- Assisted peers in developing critical thinking skills.
- Overcame challenges as a group in solving problems.

### **Science Olympiad Varsity Competitor**

*January 2016 - May 2016*

*Naperville, IL*

- Self-studied topics not included in the standard high school and AP curriculum with a partner.
- Studied Chemistry, Astronomy, and Protein modeling.
- Competed against various schools in Dupage County in different events. Placed 3rd in Chemistry and 5th in Astronomy.

## **Projects & Research**

### **CS 125 Capstone Project Typing Game**

*December 2017 - December 2017*

*Urbana, IL*

- Worked with partner to create a typing game using JavaScript, CSS, and HTTP.
- Made use of Node.js and Ngrok to set up server for multiple users to play.
- Leader and programmer for the graphical and audio aspect of the game.

### **AP Literature & Composition Capstone Essay and Presentation Development**

*February 2017 - May 2017*

*Naperville, IL*

- Analyzed a novel's conception and the multi-faceted methods of precise communication.
- Independently researched and developed a theory on the genesis of novel writing. Wrote an essay titled *A Baseline Theory on Novel Construction*.
- Presented research to a group of peers in a classroom setting.

### **AP Physics 2 Capstone Project Simulation of Gases Research**

*April 2017 - May 2017*

*Naperville, IL*

- Created a simulation of enclosed gas particles that interacted with each other.
- Researched the effects of initial conditions on the steady state of the system.
- Graphically articulated properties of gas particles useful in studying the system.

### **Humanities Capstone Treatise and Presentation Development**

*August 2016 - December 2016*

*Naperville, IL*

- Involved in a research independent study with a supervising mentor in an established school setting.
- Independently researched and wrote a philosophical treatise titled *Humility and Introspection*.
- Presented research to a group of peers in a classroom setting.

### **AP Computer Science Simulation of Planets**

*April 2016 - May 2016*

*Naperville, IL*

- Created a user interacting simulation of multiple interacting planets.
- Users can easily adjust different parameters to study the effects of gravitational force on multi-bodied systems.
- Very interactive and user friendly.

## **Extracurriculars & Activities**

Covenant Fellowship Church • Creative Writing Club • Guidance for Physics Students • Philosophy Club • Society of Physics Students  
Tennis • Reading • Hiking • Running • Playing music • Writing creatively • Learning physics, math, and writing