

# AKHIL SADAM

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## UNIVERSITY OF TEXAS AT AUSTIN

*In Progress*

### Research

#### **UTKL Group – PET Simulator**

Spring 2020 – Present

- Simulation of Positron Emission Tomography Detectors (PET) and similar gamma-matter interactions
- Currently simulating a novel PET designed for whole-body scans which employs inexpensive plastic scintillators
- Assisted with simulation of an extruded plastic wavelength shifter alternative for the LEGEND experiment
- Using Geant4, ROOT and Python via CMake and the Linux environment (C++)
- Meeting with Dr. Lang of UT Austin and others bi-weekly to discuss progress and refinements

#### **Phonon Momentum Group – Experiment Design, Theory & Analysis**

Fall 2020 – Present

- Initial experiment design and estimates of phonon angular momentum measurement via a high-Q double torsional oscillator and the Einstein-de Haas effect
- Using Python to fit resonances and calculate forces from capacitive and fiber-optic-interferometry
- Will present initial findings at the APS (American Physical Society) meeting in March 2022
- Meeting with Dr. Markert of UT Austin and others weekly to discuss progress and refinements

### Undergraduate

#### **Computational Engineering**

Fall 2020 – Present

- M375T Predictive Analytics - *In Progress*
- M427L Advanced Calculus for Applications II (AP Honors)
- COE311 Engineering Computation - *In Progress*
- COE301 Introduction to Computer Programming
- ME310T Applied Thermodynamics - *In Progress*
- EM319 Mechanics of Solids
- UGS302 Meet Your Biological Clock
- MUS306 Elements of Music - *In Progress*

Overall GPA: 4.0

## SADAM HOMESCHOOL

May 2020

### Research

#### **MIT Beaver Works Summer Institute – Autonomous Air Vehicle (Camp)**

Summer 2018

- Worked as part of a 4-person software development team
- Developed autonomy code in Python, via ROS, for an Intel RTF drone
- 40 hours per week, 4 weeks

### Education

#### **Audit: The University of Texas at Austin**

May 2020

- PHY336K Classical Dynamics, PHY373 Quantum Physics : Foundations
- PHY355 Modern Physics & Thermodynamics

#### **Dual Credit: Austin Community College**

May 2020

- Calculus 1/MATH 2413, Calculus 2/MATH 2414, Calculus 3/MATH 2415, Differential Equations/MATH 2420,
- Linear Algebra/MATH 2318, Discrete Math/MATH 2305
- Eng. Physics 1/PHYS 2425, Statics/ENGR 2301, Dynamics/ENGR 2302
- College Comp. I/ENGL 1301, College Comp. II/ENGL 1302, Macroeconomics/ECON 2301
- French I/FREN 1411, French II/FREN 1412, French III/FREN 2311

**AP Courses with Exam**

- AP Biology, AP Calculus BC, AP Computer Science, AP Physics C Mech, AP Physics C E&M, AP Statistics, AP Chemistry

Overall GPA: 4.0

**TUTORING EXPERIENCE****Pennsylvania Homeschoolers - AP Computer Science TA**

Fall 2018 – Spring 2020

- Graded the Java homework of 3-7 students
- Served as point-of-contact for the 3-7 student group
- Helped with student questions
- Worked one-on-one as a tutor if required

**Pennsylvania Homeschoolers - AP Physics I LA**

Fall 2018 – Spring 2019

- Helped students with their assignments

**Private Tutoring – Math and Physics Tutor**

Fall 2019

- Tutored a student on the autism spectrum
- Math and Physics homework, and PSAT/SAT math prep

**LEADERSHIP EXPERIENCE AND ACTIVITIES****Austin Area Homeschool Science Team - Science Olympiad Committee Member**

Fall 2017 - Spring 2018

- Communicated weekly with Science Olympiad Coach
- Organized Olympiad practice during weekly meetings
- Arranged databases for team members to input their event preferences before major competitions
- Determined members of A and B Teams (with Science Olympiad Coach)
- Determined events for each team member (with Science Olympiad Coach)
- Registered teams for invitationals, regional, and state competitions
- Ensured correct forms were collected for competitions
- Maintained and posted schedules for Olympiad competitions

**Austin Area Homeschool Science Team - Science Bowl Committee Member**

Fall 2017 - Spring 2018

- Communicated weekly with Science Bowl Coach
- Conducted Bowl practices during weekly meetings
- Determined members of A and B Teams (with Science Bowl Coach)
- Determined captains of Bowl teams (with Science Bowl Coach)
- Organized outside-meeting practices
- Assisted with team registration
- Ensured correct forms were collected for competitions

**HONORS**

- University of Texas Bennett Competition – 4<sup>th</sup> place in Calculus Fall 2020
- OPhO (Online Physics Olympiad) 17<sup>th</sup> team out of 340 worldwide Summer 2020
- USAPhO (USA Physics Olympiad)
  - Qualifier (USAPhO not held due to COVID-19) Spring 2020
  - Bronze Medalist Spring 2019
- USNCO (USA Chemistry Olympiad)
  - Semifinalist Spring 2020
  - Semifinalist Spring 2019
- AAPT Physics Bowl 2<sup>nd</sup> place in Region Spring 2018
- AIME Qualifier Spring 2016, 18
- MIT Beaver Works Summer Institute: Autonomous Air Vehicle 3<sup>rd</sup> place (Team) Summer 2018
- AP Scholar with Distinction Spring 2019
- AP Scholar with Honors Spring 2019
- President's Honor Roll at Austin Community College (8 semesters) Fall 2016 – Spring 2020

- ACC (Austin Community College) Math Tournament (AMATYC SML)
  - 1<sup>st</sup> place Fall 2019
  - 1<sup>st</sup> place Spring 2019
  - 3<sup>rd</sup> place Spring 2018
  - 1<sup>st</sup> place Fall 2017
  - 2<sup>nd</sup> place Spring 2017
  - 2<sup>nd</sup> place Fall 2016
- University of Houston HS Math and Science Competition
  - 1<sup>st</sup> in Calculus Fall 2018
  - 1<sup>st</sup> in Physics Fall 2018
  - 2<sup>nd</sup> in Calculus Fall 2017
- Texas Regional Science Bowl (Team)
  - 3<sup>rd</sup> place Spring 2019
  - 5<sup>th</sup>/6<sup>th</sup> place Spring 2018
  - Top quartile Spring 2015, 16, 17
- Texas State Science Olympiad
  - 3<sup>rd</sup> place in Remote Sensing, 4<sup>th</sup> place in Thermodynamics, 5<sup>th</sup> place in Optics, 6<sup>th</sup> place in Hovercraft Spring 2018
  - 2<sup>nd</sup> place in Optics, 4<sup>th</sup> place in Hovercraft Spring 2017
- ABRSM Theory Grade 3 Certification with Distinction Fall 2018
- ADMTA
  - Jazz, Pop, and Rock Festival (Superior Rating) Fall 2017, 18
  - Baroque and Classical Festival (Superior Rating) Fall 2017

## **ADDITIONAL INFORMATION**

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### **Computer Skills:**

- Java, C#, C++, Python, RUST, ROS, ROOT, Geant4, Mathematica, MATLAB, R Studio, Fathom, HTML, CSS, JS
- Visual Studio & VSCode, Jupyter Notebook, Anaconda, CMake
- Unity, Substance Painter, Designer, Alchemist, Quixel Bridge & Mixer, Blender, Cinema4D, Houdini, Meshroom
- Blackmagic Design DaVinci Resolve, Fusion 9, GIMP, Krita,
- FL Studio, Cakewalk, Kontakt, Reaktor
- Ubuntu, Debian, MS Hypervisor, VirtualBox, VMWare Player, MS Word, Excel, PowerPoint.

**Languages:** Limited Working Proficiency in French, Professional Working Proficiency in Telugu

**Interests:** Computational Physics, Computational Mathematics, Computational Biology, Data Analytics, Physics Simulations, Game Development, 3D Modeling & Photogrammetry, Cinematic & Electronic Music Production, Film Scoring, Piano, Literature.

**Work Eligibility:** Eligible to work in the U.S. with no restrictions