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
- Assisting 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 tri-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 2021
- Meeting with Dr. Markert of UT Austin and others weekly to discuss progress and refinements

Undergraduate

Computational Engineering *In Progress*

- M427L Advanced Calculus for Applications II (AP Honors)
- EM319 Mechanics of Solids
- COE301 Introduction to Computer Programming
- UGS302 Meet Your Biological Clock

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 May 2020

- 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 – 4th place in Calculus — Fall 2020
- OPhO (Online Physics Olympiad) 17th 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 2nd place in Region — Spring 2018
- AIME Qualifier — Spring 2016, 18
- MIT Beaver Works Summer Institute: Autonomous Air Vehicle 3rd 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)
  - 1st place — Fall 2019
  - 1st place — Spring 2019
  - 3rd place — Spring 2018
  - 1st place — Fall 2017
  - 2nd place — Spring 2017
  - 2nd place — Fall 2016
- University of Houston HS Math and Science Competition
  - 1st in Calculus — Fall 2018
  - 1st in Physics — Fall 2018
  - 2nd in Calculus — Fall 2017
- Texas Regional Science Bowl (Team)
  - 3rd place — Spring 2019
  - 5th/6th place — Spring 2018
  - Top quartile — Spring 2015, 16, 17
- Texas State Science Olympiad
  - 3rd place in Remote Sensing, 4th place in Thermodynamics, 5th place in Optics, 6th place in Hovercraft — Spring 2018
  - 2nd place in Optics, 4th 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

Computer Skills:

- Java, C#, C++, Python, RUST, ROS, ROOT, Geant4, Mathematica, MATLAB, Fathom, CSS
- 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, Swimming.

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