Shiva Kant Dwivedi

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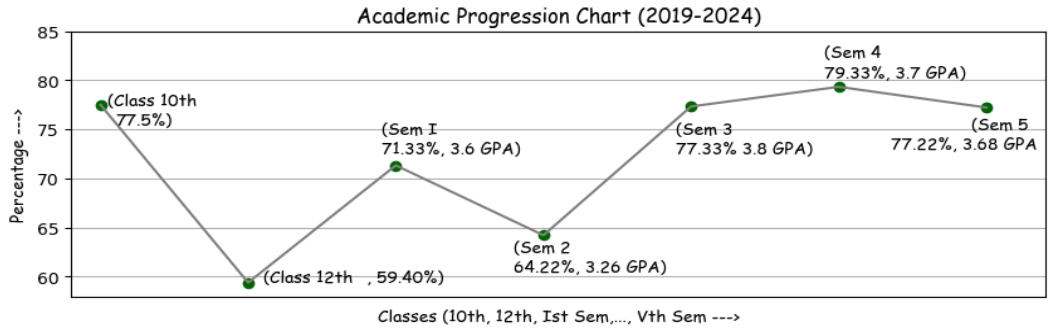
About me

I am a senior undergraduate student at Christ University working on MOdified Newtonian Dynamics(MOND) and MOdified Newton Gravity(MONG). Under Dr Arun Kenath I have been working on Lagrangian Field Equations and Poisson's Equation of Gravity therefore, trying to modify the corresponding equations within the limits to explain the Hidden Mass Problem in Galaxies and disruptions in the morphology of Galaxies at Galactic Cluster scales.
I love teaching Physics and designed a 10-hour course for college freshmen covering topics like Vector Calculus, Special Integrals, and solving Differential Equations. Looking at my grades from HS and SSC, it might not be convincing but it is worth mentioning that because of few reasons I have not had a formal education after class 10th and after completing 12th from a dummy school (during which I taught myself basic Physics and developed interest in the subject and decided to pursue it professionally) the graph of my academic performance explains my interest in Sciences. .
Areas of Interest: Theoretical Physics, Gravity, Cosmology, Particle Physics, Quantum Mechanics, Optics, Astronomy, Astrophysics

Education

- **Christ (Deemed To Be University), Bangalore** *2021-24*
  Bachelor of Science (Physics, Mathematics, Electronics) GPA: 3.60 (Ongoing)
  - **Semester 1** (August 2021- December 2021): 3.6/4
  - **Semester 2** (January 2022-May 2022): 3.26/4
  - **Semester 3** (July 2022-December 2022): 3.8/4
  - **Semester 4** (January 2023-May 2023): 3.7/4
  - **Semester 5** (July 2023-December 2023): 3.68/4

- **Academic Progression Chart**
  The chart represents my academic performance over a course of 5 years



Projects

- **Modification of Newtonian Dynamics and Modification of Newtonian Gravity** *(June 2023- Present)*
  An alternate theory proposed which explains the flat rotation curves in the outskirts of galaxies.
  - Former is a theoretical model which assumes an interpolating function in Newton's Second Law of Motion and the further modification makes the Inertia quadratic at a critical acceleration limit of $10^{-10}\ \frac{m}{s^2}$
  - The later one modifies the Poisson's equation for Gravity and arrives at the same result as the former one. Currently, we are studying the variation of Gravitational Constant, G in Potential Well.
  - Several Mathematical and Plotting tools are used to study the systems with the Modified Dynamics

- **Publications**
  Have written and published a few articles on Research Gate
  - Shiva Dwivedi, THE PHYSICS BEHIND FIREWORKS
  - Shiva Dwivedi, DIFFERENTIAL CALCULUS
  - Shiva Dwivedi, DIFFERENTIAL EQUATIONS AND ITS APPLICATIONS
  - Shiva Dwivedi, PROOFS IN MATHEMATICS

Experience

- **Course Instructor** *July 2023- November 2023*

Designed and offered 10+ hours course on Mathematical Physics Offline

  - An Introductory course on Mathematical Physics as part of extra-curricular syllabus was taken by first and second year undergrad students
  - The course was designed and offered by me and my colleagues under supervision of Department of Physics & Electronics, Christ (Deemed To Be University)
  - Particularly handled Vector Calculus, Coordinate Transformations and a couple of Applications part

- **Genesys Teacher** *August 2021- present*

Association with the goal of Education for All, to educate underprivileged children in the urban area. Offline

  - Volunteer as a tutor and organizing outreach programmes
  - Mentored several high school students over the course of two years
  - Taught Physics and Mathematics to high school students

- **Workshops**

Attended several workshops during my Undergraduate career Offline

  - **PCB Fabrication**: A hands-on workshop on manual fabrication of PCB organised by the Department of Physics & Electronics, Christ University in collaboration with SP Laboratories, Bengaluru, November 2022
  - **Radio telescope**: Completed a 2-day hands-on workshop on Radio Astronomy conducted by Naxxatra Sciences at Pravega in IISc, Bangalore. Also constructed a Radio telescope and observed the Chronosphere of the Sun. September 2022
  - **Atomic Force Microscope(AFM)**: Attended an Introductory session on the basics of Atomic Force Microscope and interacted with Dr. Ashutosh Valavade, Application Scientist, Parks Systems India Private Limited, Bengaluru, March 2022

- **Awards and Recognition** *Offline*

Have won several competitions organised by different Colleges/Universities across Bangalore

  - Quiz Master in the Intercollegiate Physics fest of Christ (Deemed To Be University February 2023
  - Won the Intercollegiate Physics fest at St Joseph's University, Bangalore as a team February 2023
  - Secured third rank in State Level fest organised by Jyothi Nivas College, Bengaluru December 2022
  - Secured first Rank in University Level Physics Quiz organised by Christ(Deemed To Be University), Bangalore on National Science Day 2022

Technical Skills and Interests

Programming Languages: Python, C++
Relevent Coursework:Mathematics with Python, 30 hrs of training with Arduino UNO Board
Soft Skills: Problem Solving, Self-learning, Presentation, Adaptability

Positions of Responsibility

- **Discussions on Theoretical Physics**, Coordinator *October 2022- present*

Christ(Deemed to be University), Bengaluru

  - An association for promoting science and conducting departmental level activities for undergraduate and graduate students.
  - Hosted several career talks from Alumni in different parts of the World
  - Organised/Managed several discussions on Theoretical Physics and Astronomy topics

Reference

- **Dr Arun Kenath -** kenath.arun@christuniversity.in
- **Dr Blesson Mathew -**blesson.mathew@christuniversity.in