

Arkyo Chatterjee

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Second Year Physics Undergraduate
CPI 9.43/10.00

Academic Credentials and Achievements

- 2015-present Pursuing **Honours in Physics**, and **Minor in Mathematics**, with an *AP grade* (given only to top 1%) in Partial Differential Equations
- 2015 Secured an All India Rank of **288** out of 1.5 lakh candidates in *JEE Advanced*
- 2015 Secured an All India Rank of **9** out of 13.5 lakh candidates in *JEE Main*
- 2015 **Topped** the higher secondary board examinations of the Council for Indian School Certificate Examinations, with a best-four score of **99.75%**
- 2015 **Topped** the West Bengal Joint Entrance Examination, taken by 1 lakh candidates from the state of West Bengal
- 2014 Among the **Top 300** candidates from throughout India who qualified for the **INPhO** (Indian National Physics Olympiad) and the **INChO** (Indian National Chemistry Olympiad)

Scholarships and Awards

- 2015 Felicitated by the *Governor of West Bengal* and awarded **Mamraj Agarwal Rashtriya Puraskar** for exceptional performance in board examinations
- 2014 Secured certificate of merit for being in the national **Top 1%** in **National Standard Examination in Physics** (NSEP) organized by HBCSE
- 2013 Recipient of **Kishore Vaigyanik Protsahan Yojana** Scholarship awarded to **top 300** students by the Govt. of India to motivate interest in research

Research Experience

- August '16-ongoing **Dynamics of Tissues**, *Department of Physics*, IIT Bombay.
Supervisor: Prof Amitabha Nandi
 - Performed simulations to replicate the results on the nuclear model of tissue dynamics
 - Using data mining tools to study the time evolution of epithelial cells in various environments, from the point of view of the vertex model of tissues
 - Studied the collective motion in driven systems, in the context of active biological matter
- May '16- July '16 **Simulation of Particle Decays**, *Department of Physics*, IIT Bombay.
Supervisor: Prof Basanta Kumar Nandi
 - Read up on the implications of the principles of special theory of relativity in collider physics, especially with reference to decay of unstable particles
 - Developed Monte Carlo simulations of two- and three-body decay processes
 - Wrote data analysis routines in CERN Root framework, including a deconvolution algorithm to remove a simulated noise signal from the useful data

Key Course Projects

- Fall '16 **Dynamics of internet memes**, *Course Project - Nonlinear Dynamics*.
Supervisor: Prof Amitabha Nandi, Department of Physics
- Studied the temporal spread of internet memes, modeled as a viral propagation
 - Used the SIR model of viral propagation for multiple pathogens, to study the competitive and collaborative effects of different memes on the minds of internet users. [Report](#)
- Spring '16 **Digital electronics**, *Course Project - Introduction to Electronics*.
Supervisor: Prof Mahesh B. Patil, Department of Electrical Engineering
- Designed a digital circuit for multiplication of 4-bit numbers
 - Studied the possibility of integrating it into a fully functional basic calculator
- Fall '15 **Battlepults game**, *Course Project - Computer Programming and Utilisation*.
Supervisor: Prof Varsha Apte, Department of Computer Science and Engineering
- Made a GUI-based interactive game called Battlepults
 - Made extensive use of the graphics library of the C++ based *SimpleCpp* package

Technical Projects

- May '16- **Institute Technical Summer Project** Built an *autonomous foosball playing robot* under the
July '16 Robotics Club of IIT Bombay
- March '16 Built a **passive noise reduction system** using the principles of analog electronics for an electronics hackathon conducted by the Electrical Engineering department of IIT Bombay
- January '16 Built a **line following robot** for an institute-wide competition, using Arduino

Key Courses

- Physics Nonlinear Dynamics, Classical Mechanics, Continuum Mechanics[†], Data Analysis and Interpretation, Thermal Physics, Quantum Mechanics[†], Waves and Optics[†], Introduction to Special Theory of Relativity, Basics of Electricity & Magnetism
- Mathematics Real Analysis, Ordinary & Partial Differential Equations, Numerical Analysis[†], General Topology[†], Complex Analysis, Calculus, Linear Algebra
- Others Electronics Laboratory I, II and III[†], Digital Systems[†], Introduction to Electronics

[†]to be completed by April 2017

Software skills

- Advanced Root, Java, C++, Python, Git, Arduino
- Intermediate MATLAB, Numpy, Matplotlib, Pandas, \LaTeX , Django, Jekyll, AutoCAD
- Basic TissueMiner, Chaste, Scipy, OpenCV, SolidWorks, C#, HTML/CSS

Interests

- Blogging Write on my personal blog on various interesting topics from the scientific/technical world
- Reading Especially thrillers and popular science
- Music Awarded Grade 4 in keyboard from Trinity College. An intermediate guitar player

Co-Curricular Activities

- Workshop **ITSP Bootcamp** Presented a demonstration explaining basics of digital electronics to batch-mates taking part in the Institute Technical Summer Projects, 2016
- Mentorship **XLR8** Mentored two freshmen teams participating in the first technical event of the year - an RC car building competition