Sankalp Gaur
Second Year Undergraduate
Engineering Physics
Indian Institute of Technology Bombay

ACADEMIC ACHIEVEMENTS

- **All India Rank 1** in JEE MAINS 2015
- **All India Rank 56** in JEE ADVANCED 2015
- **CPI** of **9.48** and Department Rank **6th** among 42 students
- **AP** grade for outstanding performance in MA 207 (Partial Differential Equations), PH 107 (Quantum Physics and Application) and CS 101 (Computer Programming and Utilization)
- **All India Rank 2** in KVPY exam conducted by Department of Science and Technology, Govt. of India, 2014
- Qualified for Orientation cum Selection Camp (**OCSC**) for International Physics Olympiad (IPhO) 2015
- All India Rank 2 in National Entrance Screening Test (**NEST**) 2015
- All India Rank 3 in National Standard Examination of Chemistry (**NSEC**) 2014
- All India Rank 3 in National Science Talent Search Examination (**NSTSE**) 2013
- Awarded **NTSE Scholarship** by NCERT, 2011
- Secured National Rank 7 in International Maths Olympiad (IMO) and National Rank 8 in National Science Olympiad (NSO), conducted by SOF in 2015

PROJECTS

Radio Telescope

Radio Interferometry and Astronomy Project (Institute Technical Project) (ongoing)

- Constructing a basic **interferometer** using parabolic reflectors and available satellite equipment along with a data processor
- Using analog circuits and micro-controllers for **digital signal processing** of the output of the antennas
- Implementing a positioning and **feedback system** for setting the azimuthal and polar angles of the satellite antennas accurately

Meme Dynamics

Non-linear Dynamics Course Project under Prof. Amitabha Nandi, IIT Bombay

- Project to study the **spread of memes** in internet culture and make an appropriate mathematical model for it using non-linear dynamics

- Keeping track of categories of memes and susceptibility of people towards memes, draw inferences and relate them to the prominent **SIR model** (Susceptible, Infected, Recovered)

Physics of Materials

In-semester project under Prof. Aftab Alam, IIT Bombay (ongoing)

- Started off with a reading project on solid-state physics, the primary book read being 'Introduction to Solid State Physics' by Charles Kittel
- Studied few papers on multi-electron systems and approximations to solve them, including Hartree-Fock method and Density Functional Theory
- Done some DFT simulations using VASP to calculate energy band gaps in semiconductors

Computer Games

Class XII School Project

- Made a single player **Cows and Bulls** game similar to mastermind
- Made a game where player is supposed to select **matching images** from an initially unknown grid of images (like the classic picture games)

COURSES COMPLETED AT IITB

- General: Multivariable Calculus, Organic-Inorganic-Physical Chemistry, Quantum Physics and Application, Linear Algebra, Ordinary Differential Equations, Basics of Electricity and Magnetism, Computer Programming and Utilization, Economics, Complex Analysis, Partial Differential Equations, Numerical Analysis

- Engineering Physics: Classical Mechanics, Data Analysis and Interpretation, Introduction to Special Theory of Relativity, Thermal Physics, Non-Linear Dynamics, Quantum Mechanics (upto spin and angular momentum), Waves and Optics, Continuum Mechanics

- Electrical: Introduction to Electrical Systems, Introduction to Electronics, Signals and Systems, Digital Systems, Electronic Devices and Applications

CODING SKILLS

- Intermediate: C++, Java, Python, VHDL
- Beginner: HTML, MATLAB, LaTex, Arduino, AVR, FORTRAN

EXTRA-CURRICULAR ACTIVITIES

- Stood 1st, all over India, in **Tata Power and Energy Club** Quiz 2010
- Won **Energise**, the quiz conducted by Energy Club, IIT Bombay, 2016
- Came 2nd in Jigyasa, Annual Science Quiz of Centre for Excellence in Basic Sciences (CEBS), Mumbai
- Team obtained 4th position in **Logic GC** 2015 among more than 500 participants of IITB
- Participated in XLR8 and Line Follower Competitions at IITB
- Good at computer games; reached **World Rank 2** on gaming site agame.com
- Regularly play sports such as Badminton and Cricket