

# Sanaa Agarwal

*Current student, avidly pursuing Physics at:*

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## OBJECTIVE

Learning Physics has always been the means for me to understand Nature. Everything I do is aimed at going a level deeper.

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## EDUCATION

**BITS Pilani**, Pilani Campus - **CGPA 8.59/10**

*Masters in Science (Hons.) Physics* - **GPA(Major) 9.4/10**

*Bachelor in Engineering (Hons.) Mechanical*

AUGUST 2014 - PRESENT

**Delhi Public School**, Siliguri

*Higher Secondary*

[CBSE] - **94.8%**

*Matriculation*

[CBSE] - **CGPA 10/10**

APRIL 2004- MARCH 2014

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## RELATED COURSEWORK

### Theoretical:

Nuclear and Particle Physics, Atomic and Molecular Physics, Solid State Physics, Quantum Mechanics, Statistical Mechanics, Computational Physics, Fluid Mechanics, Material Science, Quantum Information and Computing, Electromagnetic Theory, Introduction to Astronomy and Astrophysics, Classical Mechanics, Optics, Applied Thermodynamics, Nonlinear Vibrations, Finite Element Method, Heat Transfer.

### Practical:

Computational Physics, Advanced Physics Lab, Modern Physics Lab, Electromagnetic and Optics Lab, Computer Programming.

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## PROJECTS

### Currently in progress-

- A semester-long study-oriented-project at BITS Pilani on the topic, **Early Universe- Cosmological Inflation**, under the guidance of Dr. Tapomoy Guha Sarkar.
- A semester-long design-oriented-project at BITS Pilani on the topic, **Quantum Chaos - Entanglement in Coupled Kicked Systems**, under the guidance of Dr. Jayendranath Bandyopadhyay.
- A short project as a part of the course *Nonlinear Vibrations* at BITS Pilani on the topic, **A Class of Nonlinear Oscillators with Amplitude-independent Frequency**, under the guidance of Dr. Amol Marathe.

### Completed-

Participated at the **Vacation Students' Programme'17** at **Inter-University Centre for Astronomy and Astrophysics(IUCAA), Pune** in the summer of 2017. It consisted of a series of lectures delivered by the esteemed faculty of IUCAA and NCRA-TIFR on a wide range of topics in Astrophysics and Cosmology. A summer project in theoretical Astrophysics was pursued as a part of the programme:

- Topic: **Magnetic Reconnection**
- Mentor: *Prof. Kandaswamy Subramanian, Distinguished Professor, IUCAA, Pune*
- Overview: *Studied the phenomenon of magnetic reconnection in astrophysical plasmas and analytically reviewed the Sweet-Parker Model and Tearing mode Instability using magnetohydrodynamics.*

An experimental project in condensed matter physics at the Department of Physics, **Indian Institute of Science, Bangalore** in the summer of 2016.

- Topic: **Synthesis, Crystal Growth and Dielectric Properties of Ilmenites.**
  - Mentor: *Dr Suja Elizabeth, Chief Research Scientist, IISc Bangalore.*
  - Overview: *Single crystal growth using optical float-zone technique and characterization of synthesized samples using techniques such as X-Ray Diffractometry, Dielectric measurements on LCR, Laue Scattering.*
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## WORKSHOPS

- Participated at the **Winter School on Solar Physics '17** organised by the **Indian Institute of Astrophysics** at its Kodaikanal Solar Observatory.
  - Participated at the **ARIES Training School on Observational Astronomy '17** held at ARIES, Nainital. A short informational project was done:
    - Topic: **Intra Night Optical Variability of Radio-Quiet Weak Emission Line Quasars**
    - Overview: *Image processing in Image Reduction and Analysis Facility, Photometry.*
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## SKILLS AND ACTIVITIES

- **Computer Programming in Python and C**
- **Maple and MATLAB (for solving differential equations, plotting, matrices, numerical integration etc)**
- **Freefem++ (a free software for solving problems using finite element method)**
- **Solidworks design**
- **X-ray diffraction analysis using Fullprof Suite**
- **Data analysis and presentation on OriginLab, Gnuplot**

- Actively involved in the **Students' Academic Cell**, which functions under the guidance of the Director of BITS Pilani towards augmenting the institute's academic and research culture.
  - Initiated the **Undergraduate Journal Club** at the Department of Physics, BITS Pilani in which students meet to discuss interesting research papers and their project experiences.
  - Represented BITS Pilani at national inter-university sports meets as a player of the **taekwondo** team.
  - As a part of the **Inspired Karters team**, represented BITS Pilani at the **SAE Baja 2016** competition.
  - **Group Leader** at the **Guest Lectures' Team** for **APOGEE**, the technical festival of BITS Pilani.
  - **Treasurer** at the **Paper Presentation Team** for **APOGEE**.
  - **Teaching Assistant** at Instruction Division, BITS Pilani.
  - Member of the Student Faculty Council at the Department of Physics, BITS Pilani.
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## INTERESTS AND HOBBIES

Reading, Swimming, Playing guitar, Trekking and travelling, Classical dance 'kathak', Star-gazing.

