

A VISIT TO IUAC

On the occasion of National Science Day, i.e. 28th of February, the students of Department of Physics got the opportunity to visit the Inter-University Accelerator Centre (IUAC), New Delhi. The event this year celebrated the Women in Science and consisted of various lectures by some of the most eminent minds of our country followed by a facilities visit at IUAC, giving some insight into the multiple experiments taking place there.

The day began with the inaugural speech given by the director of IUAC, Dr. A.C. Pandey. This was followed by a lecture on "Revised SI units and their Implications" by the esteemed director of CSIR-National Physical Laboratory (NPL), New Delhi. The talk was aimed towards highlighting the importance of as simple a thing as the SI units in the field of research which most of us end up looking through. We also learned that CSIR-NPL not only serves as a base to various research works but also as the National Metrological Institute for India. He also introduced to us about the various departments of the organizations including the maintaining of the Indian Standard Time or the IST with the help of atomic clocks.

The second lecture was given by Mr. R. Mehta (IUAC) on "A Particle Accelerator: How it works and why it matters". As the title of the talk suggests, he introduced us to the physics which goes behind the working of one of the most indispensable machine in the field of research. An inter-college poster competition was organized right after on the topic "Applications of Particle Accelerators for Mankind: A Futuristic View" in which various colleges from across Delhi participated, us being one of them. Our poster consisted of the research done by some of the students of our department on Thermoluminescent materials which prove themselves useful in Radiotherapy. The last lecture for the day was given by Dr. A. Tripathi (IUAC) on "Material Science Research activities at IUAC" during which the students learned about the various research works active at the facility and the techniques that are employed for the same. The was concluded by a visit to some of the facilities at IUAC to give us a better insight into the experimentation.

As a part of the visit, the students also visited the experimental setups discussing the actual procedures followed to carry out experiments using the ion beams and accelerators. The large machines and instruments' working, although complicated, was briefed in a layman manner to the students to understand the basics of the concepts and processes.

The first visit was to the fusion/fission detector and the gamma ray detector. Although the systems were not operational, yet the guide explained about the working in a nutshell. As the beam strikes the foil target, the reactions take place and the detectors indicate the presence of the desired end products, if formed. Huge magnets used to deflect the path of the ions and the reaction products were also shown.

The second was the setup for the interaction of ion beam with the metal mass to study the interaction when the beam is made to fall on a metal kept in the chamber evacuated to about 10^{-6} orders of magnitude. Various proposed experiments on different ceramics are carried out there.

In the third lab, was placed a LINAC, Linear Accelerator. Although in non-operational mode, the instructor explained the very setup and working of it while the students listened curiously and patiently. The electric fields and potentials used to accelerate the charges also depended upon the length of the accelerator and are designed in such a way to equate the time taken by cover a length and force experienced in the path.

The final visit was to the control lab consisting of huge systems to electronically control the signals sent to such huge structures difficult to operate simultaneously, if done manually. The specialized systems also controlled the radiation absorption making the external human working area lesser exposed to harmful radiations.

Proper care was taken to ensure the safety of the students and it was made sure that the basics of all the working systems could be explained to much extent as possible.

