Atomic and Nuclear Physics Laboratory

Atomic and Nuclear Physics constitute very important component of Fundamental Physics. On one hand, the concepts of Atomic and Nuclear Physics can be closely related to certain aspects of nature of the Universe on the other hand they are of immense importance in developing advanced level technologies. It is therefore imperative for the students of physics to have deep understanding of theoretical concepts. This requires students to go through hands-on exercises based on core fundamentals. To fulfill this objective the Atomic and Nuclear Physics Laboratory, being offered in the 2nd Semester of M.Sc. Physics program, introduces students to the basic and essential aspects of modern experimental physics. A set of ten experiments involving concepts of Nuclear and Atomic Physics are assigned for this laboratory. The theoretical aspects of these experiments would be introduced in the respective lecture courses. The students acquire, hands-on expertise as well as modern skill-set to carryout basic and advanced experiments along with fundamental physics involved in the experiments. The laboratory manuals with clear instructions to be followed are provided to the students for their immediate consultations as well as preparation of the laboratory report. A list of experiments being currently offered in the Atomic and Nuclear Physics Laboratory includes:

| S. No. | Name of Experiment |
|--------|---|
| 1 | Compton Scattering: Energy determination |
| 2 | Gamma Ray Spectroscopy using Na(I) detector |
| 3 | Photoelectric effect |
| 4 | Alpha particle spectrometer: Energy resolved |
| 5 | Frank-Hertz Experiment |
| 6 | Radiation Counter for Alpha and Beta Particles |
| 7 | Determination of Charge of electron using Milikan's oil drop method |
| 8 | Zeeman effect |
| 9 | Determination of Rydberg's constant |
| 10 | Determination of charge-to-mass (e/m) ratio of electron |





