

# TATA INSTITUTE OF FUNDAMENTAL RESEARCH

Homi Bhabha Road, Mumbai-400 005

December 29, 2017

## ASET Colloquium

- Speaker** : **Dr. Subhendu Ghosh** (*IUAC, New Delhi*)
- Title** : **Development of Delhi Light Source (DLS) at IUAC**
- Date & Time** : **Friday 19 January 2018 at 16:00 hrs.**
- Venue** : **Lecture Theater (AG-66.)**

### Abstract :

Free Electron Laser (FEL) is a fourth generation light source which can deliver photon beams covering the electromagnetic spectrum from THz to X-rays. Typically, Free Electron laser is of three types: Oscillator, Seeded and SASE (Self Amplification of Spontaneous Emission). In each type of FEL, the micro-bunching of the electron takes place inside the undulator and spacing between the microbunches is made equal to the radiation wavelength produced by the electron. In the first part of the Delhi Light Source (DLS) project, the micro-bunching takes place at the Photocathode, the location of the initial production of the electrons. This approach helps to make the system very compact, less expensive and fairly simple. The electron micro-bunches after gaining energy from the electron gun will be injected in to the compact undulator magnet to produce the THz radiation in the range of 0.18 to 3.0 THz. The electron beam and the THz radiation can be transported to several experimental stations to perform basic and applied research in the field of physical sciences, materials science, biology, medicinal science, etc. Various interesting pump-probe experiments can be planned by experimentalists by using the combination of femtosecond pulses of electrons, THz and Laser. Complete accelerator facility including the experimental stations will be accommodated inside the newly built class 10000 clean room. The concept of the pre-bunched FEL, the outline of DLS and the possibility of different types of experiments will be discussed in the presentation.



Dr. Satyanarayana Bheesette  
(Coordinator, ASET Forum)