

# **IIA-CU-PhD(Tech) Viva-Voce Examination**

**Speaker:** Tarun Kumar Sharma

**Title:** Development of instruments for astronomical site characterization and their application.

## **ABSTRACT**

Before setting up any large observational facility, selection of a suitable site is an important task. It requires a variety of site survey instruments, which helps to carry out a detailed comparative study of candidate sites and choose the best one. Most of these site survey instruments are specifically designed devices and not available from commercial agencies. Under this Ph.D. thesis we have developed two innovative instruments. The first one is an automated extinction monitor, a device which measure atmospheric transparency very precisely. The extinction monitor which uses large number of stars, can precisely determine extinction in one of the photometric band, can detect presence of thin cirrus clouds and also capable to simultaneously measure sky brightness. Other device is a scanning cloud monitor, developed around thermopile based IR sensors to measure excess radiation reflected from the cloud. Our cloud monitor has better contrast between sky and the cloud and less affected by the presence of the Moon and other extended objects in the sky. Both extinction and cloud monitors have been deployed at IAO Hanle and being in regular operation over last couple of years. In addition to above two instruments, the effort has also been made to develop a sturdy telescope for the MASS-DIMM device. The telescope uses direct drive technology which makes to overcome the problem of wind induces disturbances. In my presentation I will briefly describes, the need for developing these devices, their mechanical design, hardware and software controls. I will also present the extensive effort made to calibrate, test and validate the data generated from these devices as well as results obtained over few years of operations.

**Date:** Friday, 27<sup>th</sup> April 2018

**Time:** 11:00 AM

**Venue:** Auditorium, IIA

**All Are Welcome**