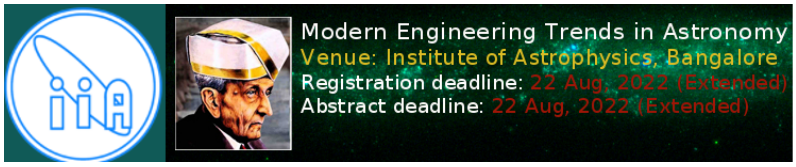

Contribution ID: **20** Type: **not specified**

A portable, low-cost multispectral system for monitoring night sky brightness over the astronomical sites

Light pollution, resulting from excessive, ubiquitous, and improperly directed artificial light sources in the surrounding region of several astronomical sites is a matter of great concern. Deterioration and washing out of the natural dark skies due to the proliferation of anthropogenic light pollution over these sites adversely affect the efficiency and quality of astronomical observations due to the scattering of artificial light in the atmosphere. Various methods exist to measure and monitor the level of night sky brightness (NSB) over astronomical sites, including both natural and artificial light contributions; some of these methods are - astronomical photometry, satellite remote sensing, and instrumental. The present work discusses the instrumental method, which could be panchromatic or multispectral. The simplest measurement of sky brightness is achieved mainly using DigiLum Luminance Meter, Mark Light Meter, and Sky Quality Meters (SQMs), which are panchromatic. However, to track the change in colour of the sky (e.g., to follow the change in colour of the newly installed lighting devices), a multispectral approach is needed. In addition to the panchromatic measurements, two portable, low-cost multispectral systems have been developed for monitoring the NSB over the observational facilities at Manora Peak and Devasthal sites of Aryabhatta Research Institute of observational sciencES (ARIES). The developed multispectral units are direct current (DC)-operated, Internet of Things (IoT) based systems that measure the night sky brightness in magnitudes per square arc second (mag arcsec-2). Additionally, the system also captures photographic images of the night sky and records the global positioning (GPS) information, and environmental parameters like temperature, pressure, and humidity at set intervals.

Presentation type

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