Editorial

It is indeed a great pleasure and privilege for me to introduce the current issue of *Mapana* Journal of Sciences, which is committed to publishing original and novel research and review articles from Physical Sciences. We encourage the authors to submit note-worthy research articles in the field of Physics, Electronics and related interdisciplinary areas. This issue of the journal comprises of articles pertaining to different areas of Astrophysics. This issue's focus is primarily driven to provide a broader arena to publish nuanced perspectives of Astrophysics. A researcher in Astrophysics requires perseverance, determination, programming skills along with a scientific blend of mind. We are delighted to publish six articles related to research in this area which provides a glimpse of the world of Astrometry, Gaia, Dark Energy, Stellar Tracks and Isochrones and Acoustic Waves, each one of which is relevant and the articles provide research insights that contribute towards the episteme of the discipline in significant ways.

The first article "**Astrometry: The Foundation for Observational Astronomy**" by Amith Govind, Devarshi Choudhury, Blesson Mathew and Paul K T present a technique of determining equatorial coordinates of celestial bodies from their pixel coordinates. They further outline the subsequent results of this technique in achieving the initial few steps required for the multi-wavelength studies of young open clusters.

Nidhi Sabu, Thomaskutty Francis, Arun Roy and Sreeja S Kartha in their article "**Gaia: Surveying Heavens**" describe the study of an ongoing astrometry mission of the European Space Agency (ESA), named Gaia, whose aim is to make the largest and most precise three-dimensional map of our Galaxy. The article reflects the scientific goals of Gaia and gives a brief description of the spacecraft. It also presents a preliminary analysis of comparing distance estimates of Be stars from the first Gaia data release, Gaia DR1, and Hipparcos mission. The study confirms that Gaia stands out as a promising mission in terms of the distance measurements when compared to Hipparcos, particularly for distances greater than 1 kpc.

The third article by Louise Rebecca, C Sivaram and Kenath Arun give an insight into "**Dark Energy and Cosmological   Constant**". The authors present a brief overview on the observational basis for Dark Energy (DE) hypothesis and how cosmological constant, initially proposed by Einstein to obtain a static universe, can play the role of dark energy.

In the article "**Comparative Study of Different Stellar Tracks and Isochrones**", Devarshi Choudhury, Amith Govind, Blesson Mathew, and Paul K T present a comparative study of three widely used competent stellar models MIST, PARSEC and Siess. They analyze the input physics and the evolutionary tracks thus generated, especially focusing on the behaviour of the models during the pre-main sequence phase.

The fifth article by Swati Routh, Arka Bhattacharya, Snehanshu Saha, Madhu Kashyap outline the "**Propagation Characteristics of Acoustic Wave in Non-Isothermal Earth's Atmospheres**". They make use of integral transformations to cast the wave equations for both wave variables in their standard forms. Consequently, turning point frequencies are computed for each wave variable by using oscillation theorem.

The final article of the issue is titled "**Methods to Identify Star Clusters in the Large Magellanic Cloud (LMC)".** The authors from the Indian Institute of Astrophysics, Bangalore, try to identify the survey (optical/NIR) that be used to efficiently detect and study the clusters in the LMC. They establish that the available OGLE-III optical data is ideal for this purpose, but only for young clusters, whereas Deeper optical data from DECAM survey, OGLE-IV and skymapper are ideal to study poor and old clusters. They also found that one can combine the ongoing VISTA data with upcoming optical data (OGLE IV) and estimate the cluster parameters more accurately.

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Manoj B
Issue Editor