

Foreword

The visible Universe contains billions of stars, although the baryonic matter that constitutes it, by proportion, occupies just over a quarter of the total matter in the cosmos. Understanding the formation of stars is therefore one of the fundamental problems in contemporary astrophysics, and is being actively researched by the global star-formation community, both observationally as well as theoretically. The dynamical process leading to the formation of stars is highly non-linear and spans several orders of magnitude in density, and temperature. Stars in their infancy are generally associated with energetic outflows, and jets; the latter are more powerful, and better collimated compared to the former. More recent observations also associate jets with sub-stellar objects, the so called brown dwarfs (BDs). It is widely believed that momentum deposited by these energetic ejecta, also called stellar feedback, could have substantial effect on the efficiency of star-formation in the parent cloud.

The theory of star-formation, as is perhaps well-known, presents a paradox; while on the one-hand the physical processes leading to stellar birth are much better understood now, the physical properties of star-forming regions are hitherto less-known, and only being unraveled over the last few years through a number of detailed observational surveys at a number of wavelengths (SPITZER, HERSCHEL, SCUBA, UKIDSS, AKARI). The enormous volume of data available today has therefore significantly advanced our understanding of the subject. Instruments with ever increasing resolution and sensitivity have provided unprecedented access to star-forming regions and it is therefore crucial to find opportunities to abreast ourselves with the latest developments in the area, both under observational and theoretical domains. The data collated from the SPITZER and HERSCHEL space observatory in the recent past, and the anticipation of the ALMA telescope has provided an impetus to the global star-formation community which has catapulted in to a number of conferences dedicated to various aspects of the subject. Encouraged by these activities on the global scale, we conducted this meeting at the Indian Institute of Astrophysics, Bengaluru.

Even within India the area of star-formation is being actively researched, for which observational facilities, both national as well as international are being used. Two telescopes were added to the existing facilities in the beginning of this decade (the two 2m class telescopes of IIA and IUCAA), and two new 1.3m telescopes will be operational very soon; one each in Devasthal and Kavalur. The proposed 3.6m telescope at Devasthal, so far the largest optical telescope in India, is expected to become operational within the next two years. ASTROSAT, the Indian multiwavelength space telescope with one UV and 4 X-ray telescopes will be launched in the next year. Also, the proposed installation of a high performance computational cluster at the IIA, Bengaluru, will provide an excellent computational facility that could be better exploited by building a larger network of researchers.

This was the first of the two meetings which were the highlights of the silver jubilee celebrations of the Vainu Bappu Telescope (VBT). It was organised at the Bengaluru campus of IIA, between 28th June and 1st July 2011 and brought together leading researchers in the area of observational and theoretical star-formation from

within, and outside India. More importantly, the workshop provided opportunities for young researchers, and post graduate research students to interact with the more established astronomers. The conference was principally funded by the Indian Institute of Astrophysics. We thank the Department of Science & Technology for the financial support provided for the conference. We wish to thank our Director, Prof. Siraj Hasan, and the Dean of the Faculty, Prof. Harish Bhatt, for their relentless support. A team comprising of Dr Sumedh Anathpindika, Dr Mousumi Das, and Dr Padmakar Parihar led by Prof. Annapurni Subramaniam organised the conference, but could not have been successful without the able support of the local administration that made the venue as comfortable as possible for our participants. In this regard we thank our staff in the administration, in particular, Dr P. Kumaresan, Mr K. T. Rajan, Mr M. P. Parthasarthy and Mr S. Rajendran.

The meeting was spread over three and a half days and had invited as well as contributed talks, spread over 7 sessions. There were 30 talks altogether. The last session was dedicated to the upcoming facilities in India. There were 8 poster presentations and the authors also presented the highlights of the poster in a two-minute talk session. We have compiled most of the talks presented in the meeting. We thank all the authors for their contributions for the meeting as well as for the proceedings. We also thank the referees for their timely reviews.

Finally, we thank the Editors of the Bulletin of the ASICS and Ms. Sandra Rajiva for the editorial support in bringing out the proceedings of the meeting in print.

Annapurni Subramaniam
Indian Institute of Astrophysics
Bengaluru

Sumedh Anathpindika
Indian Institute of Astrophysics
Bengaluru