



Localizing fast radio bursts with BURSTT at Gauribidanur Radio Observatory

Saurabh Singh¹, Somnath Dutta², Prabu T.¹, Girish B.S.¹, Srivani K.S.¹, BURSTT Collaboration

¹Raman Research Institute, Bengaluru, India; e-mail:saurabhs@rri.res.in

²Institute of Astronomy and Astrophysics, Academia Sinica, 11F of AS/NTU Astronomy-Mathematics Building, No.1, Sec. 4, Roosevelt Rd, Taipei 10617, Taiwan, R.O.C.

Keywords : Fast Radio Bursts, very long baseline interferometry, radio astronomy

Fast radio bursts continue to be the most elusive phenomena in the Universe. Though there has been significant increase in the number of detections of these objects, their origins are still unknown. The investigation is further complicated by the fact that some of these repeat from timescales of sub-seconds to months. We propose an array of radio antenna, BURSTT (Bustling Universe Radio Survey Telescope in Taiwan), which will, for the first time, enable precise location of these objects, collaborate with other telescopes, and establish the origins of this mysterious events. The precise localization will be achieved by constructing 64 element outrigger radio array at Gauribidanur Radio Observatory (GRO), Karnataka. This station will work in tandem with the station in Taiwan using long baseline interferometry (VLBI). By correlating signals across 4700 km, we will be able to narrow down their precise locations in the sky, enabling follow-up observations. With 25 times higher area than state-of-the-art telescopes, BURSTT will result in detection of 1000 localized fast radio bursts detections in a single year, enabling investigation of their origins and using them to study the contents of our Universe.

In this talk, I will present the current status of BURSTT experiment, and place it in the larger landscape of experiments for fast radio burst studies. This will be followed by discussing the suitability of Gauribidanur Radio Observatory for conducting observations of fast radio bursts as a BURSTT outrigger element in frequency range of 400-800 MHz. I will layout the architecture of the system, along with the current status and conclude with future plan and forecasts.