

Fast Radio Bursts: from Multi-Beam Receivers to Interferometers

M. Caleb

Jodrell Bank Centre for Astrophysics, University of Manchester, UK
email: manisha.caleb@manchester.ac.uk

Abstract. Radio astronomy is currently exploring an intriguing new phase-space that probes the dynamic Universe on time-scales of milliseconds. Recent developments of sensitive, high-time-resolution instruments has made possible the discovery of millisecond-duration fast radio bursts (FRBs). The FRB class encompasses a number of single pulses, each unique in its own way, hindering a consensus for their origin. The key to de-mystifying FRBs lies in discovering many of them in real time in order to identify commonalities. The recently upgraded UTMOST, in Australia, has undergone a digital back-end transformation to rise as a fast-transient detection machine. The talk presented the first interferometric detections of FRBs made by this telescope at less than a quarter of its target sensitivity, placing their origin beyond the near-field region of the telescope and thus ruling out local sources of interference as a possible origin. Despite rigorous follow-ups, none of the FRBs observed with the upgraded UTMOST has been seen to repeat, suggesting the possibility of there being two independent classes of FRBs with two classes of possible progenitors. The talk then discussed the recent developments in the field, some of the open questions in FRB astronomy, and how the next-generation telescopes are vital in the quest to understand this enigmatic population.

Keywords. Instrumentation: interferometers, Radio: Fast Radio Bursts
