



ASKAP wide FoV surveys for FRBs

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ASKAP is a 2D interferometer array with an extremely wide field of view enabled by the focal plane arrays at the focus of each telescope. This unique combination has enabled a very productive FRB survey and localization project carried out by the CRAFT collaboration. To date 56, mostly non-repeating, FRBs have been found and 26 have been localised with sub-arcsecond accuracy. This positional accuracy is necessary and sufficient to identify host galaxies out to high redshift. 24 host galaxies have been identified and their redshifts have been measured. In the first part of my talk I will summarise these results.

In the second part of my talk I will discuss the unusual aspects of the data processing and survey strategies. For non-repeating transients, positions and other pulse properties have to be measured during the pulse and standard off-line data processing techniques can't be used. With 36 antennas, each with 36 phased array beams data rates are far too high for off-line DM searches with the required frequency and time resolution. A new backend, CRACO, is being developed to do coherent FRB detection over the full field of view in real time. This will significantly increase the ASKAP FRB survey sensitivity.

For non-repeating transients the discovery rate is directly proportional to the instantaneous field of view as well as the sensitivity and this has interesting implications for the optimum survey strategy and instrumentation. I will describe a powerful all sky transient survey instrument which could be built using the phased array feed technology as a ground based dense aperture array.