

Rapid response to external transient alerts with the Engineering Development Array

In the era of automatic observatories operated by computers rapid response to transient alerts has become a routine observing mode of many telescopes. There are several transients distribution network, such as for example The Gamma-ray Coordinates Network ([GCN](#)) or [VOEvents](#), providing alerts about transient events shortly (within seconds) after their discovery. For instance, very recently several high impact gamma-ray events have been reported from Soft Gamma Repeater (SGR 1935+2154) which were also immediately followed-up by radio telescopes and detected as a fast radio-bursts ([FRBs](#)). Moreover, FRBs have recently been observed even down to 328 MHz ([Pilia, M. et al \(2020\)](#)), but they are yet to be detected at frequencies below 300 MHz.

The Engineering Development Array 2 (EDA2; Wayth et al in preparation) is a precursor station of the low-frequency component of the Square Kilometre Array ([SKA-Low](#)), which will be built at the Murchison Radio-astronomy Observatory in Western Australia in the next decade. The EDA2 is composed of 256 MWA dipoles with analogue signals from each individual antenna digitised enabling nearly immediate re-pointing of the array beam in a specified direction in the sky.

The main goal of this project is to develop automatic triggering system for the EDA2 and use it to automatically trigger EDA2 observations by alerts from external instruments. The triggering system will only react to alerts with sufficiently precise localisations (of the order of a few degree beam size of the EDA2). We anticipate that several events (such as Gamma Ray-Bursts, outbursts from SGRs or FRBs) will be triggered during the timeline of the project leading to either positive detections or upper limits on the flux densities of their low radio-frequency counterparts - both extremely interesting from a scientific perspective.

Research Field

Radio Astronomy/Engineering

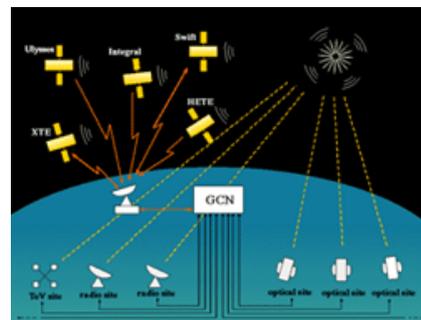
Project Suitability

Masters, Honours, PhD

Project Supervisor

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GCN: The Gamma-ray Coordinates Network (Credit NASA)



Panorama of the Engineering Development Array (EDA) at the Murchison Radio-astronomy Observatory