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## Charting New Frontiers: Italian Efforts in FRB Multi-wavelength Studies and the CHORD Experiment

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One of the most intriguing problems in modern time-domain radio astronomy, which will be a key scientific question to address for the SKA observatory, is understanding the nature and origin of fast radio bursts (FRBs). FRBs are bright radio transients primarily originating from sources outside our galaxy, and, to date, they have only been observed in the radio band.

On April 28, 2020, the CHIME and STARE2 experiments detected two radio bursts closely resembling those produced by FRBs. These bursts were attributed to the Galactic magnetar SGR J1935+2164 and were simultaneously detected in the high-energy band. This event has positioned magnetars as one of the most plausible sources of FRBs, at least for a subset of them. It has also motivated multi-wavelength campaigns aimed at FRB-known sources to search for their high-energy and possibly optical counterparts.

In this presentation, I will discuss the efforts of the Italian research community from 2020 to the present day, focusing on several multi-frequency campaigns targeting FRB sources. Additionally, I will talk about INAF's involvement in the upcoming Canadian Hydrogen Observatory and Radio-transient Detector (CHORD), an innovative development from the SKA pathfinder CHIME. With its large field of view and real-time capabilities for detecting and precisely localising these events, CHORD has the potential to be a game-changer in the quest to achieve a long-sought panchromatic detection of FRBs.

### Research area

Transients

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