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A burst detection from FRB 20240209A at 1.3 GHz using the Westerbork-RT1 25-m telescope

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We report on the detection of a fast radio burst (FRB) originating from the CHIME/FRB-discovered source FRB 20240209A (ATels #16670, #16682, #16687). We detected the burst using the 25-m Westerbork RT-1 telescope observing at a central frequency of 1.27 GHz (L-band) with a 128-MHz bandwidth (see [Kirsten et al. 2024](#) for more details on the observational setup). This detection marks the highest frequency at which the source has been observed, demonstrating that the source is active and detectable at L-band.

The preliminary properties of the burst are:

Arrival time (MJD, TDB): 60601.595462943

Fluence: 32 +/- 6 Jy ms

Dispersion measure (DM): 174.16 +/- 0.1 pc cm⁻³

The arrival time is referenced to infinite frequency (using the quoted DM) at the Solar System barycentre (in TDB), and assuming a DM constant of 1/(2.41 x 10⁻⁴) MHz² pc⁻¹ cm³ s. We estimate the fluence by averaging over the full observing bandwidth and applying the radiometer equation using a system equivalent flux density (SEFD) of 420 Jy. The error on the fluence is roughly 20% and arises from the uncertainty on the SEFD of the telescope. Using the DM reported in the discovery ATel (#16670, 176.57 +/- 0.03 pc cm⁻³) to account for the dispersive delay resulted in an overcorrection. The DM we use was determined by the burst-searching algorithm Heimdall. It is not clear yet whether the difference in DM is true temporal evolution or arises from an underlying complex burst structure. The voltage data of the burst was saved, which will allow us to study the full polarimetric properties of the burst with coherent dedispersion.

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- 16670** [CHIME/FRB discovery of an active new repeating fast radio burst source FRB 20240209A](#)

Since its discovery in June 2024, we have been monitoring this FRB as part of the HyperFlash program (High-Cadence FRB Monitoring with European Radio Dishes). Up to the publication of this ATel, we have accumulated 500 hours of observing time, spread across observations at central frequencies of 330 MHz (P-band, 150h) and 1.4 GHz (L-band, 350h). Our average detection threshold at L-band for the various telescopes is ~ 6 Jy ms. Thus far, no bursts have been detected at P-band above our detection limit of ~ 50 Jy ms. We will continue to monitor this source. Besides with CHIME/FRB, FRB 20240209A was so far only reported to be detected by the Northern Cross telescope at a central frequency of 408 MHz (ATel #16692).

Over the past week, FRB 20240209A has been detected multiple times by CHIME/FRB, as reported by the CHIME/FRB VOEvent Service and on their [public website](#). The recent detections by CHIME/FRB, combined with our own, show that the source is in a state of heightened activity across a broad range of radio frequencies. We therefore encourage follow-up observations across all wavelengths.

Plot of the dynamic spectrum and time-series of the burst
