Catalog and List description

For detailed description please check and cite the paper.

Catalog is divided into 2 main sections:

1. DH type II
2. Associated events: CME, flare and SEP

Section1: DH type-II

It has two sub-sections:

Properties

The basic properties of the burst as seen in the decameter-hectrometric band dynamic spectrum.

Start_date, Start_time, End_date, End_time provides the time interval of the burst
Freq_start and Freq_end provides the frequency extent.
The other columns are:

Detection: All spacecraft that detected the burst
Best mission: The spacecraft that detected the most long-lived burst signature with the best frequency extent and also had good quality data.
Peak_Flux: The maximum flux within 3 - 7 MHz range in the data from the best mission.
F_thresh: The typical background radio flux in the dynamic spectrum during non-flaring period.

Quality metrics

To identify the good data stream and event detection across spacecraft during a burst event, we define multiple quality metrics.

Data:

This metric rate the data stream from each spacecraft in a scale of 0 to 2. When 0 represents data gap, 1 represent poor quality data, often due to lot of intermittent data gaps making it difficult to identify structures in the dynamic spectrum and 2 represent good data.
The letter tag W stands for Wind, A for STEREO A and B for STEREO B.

Event:

This metric rates the quality of the event recorded by the best data stream. An event is rated across two axes: shape (S) and intensity (I). A type-II event with a very well identifiable shape in the dynamic spectrum is given a rating of 3 while 1 represents an event whose shape is not very evident. This could be because it extends only within a narrow spectral

band or because the event is in a crowded region of the dynamic spectrum where other burst types make the shape determination difficult. Similarly along intensity axis 3 represent a bright event while 1 denote an event with a relatively low intensity in the part of the dynamic spectrum where it is detected.

- All events of with a metric Sxly, where x>1 and y>1 are generally reliable.

Reliability:
This metric rates the reliability on the radio flux estimates from 3 – 7 MHz range. The letter tag F rates the crowdedness of the dynamic spectral region or 'Field' where the burst is observed. If there are numerous other radio emission features in the 3 – 7 MHz band when the type-II emission was happening, then F is given a high value to indicate high crowding in the dynamic spectrum. A value of 2 is given when the crowdedness is so high that the radio flux is not reliable. 1 denote a case where it is barely reliable but the probability of the emission being admixed with other burst types is non-negligible. 0 denotes the best case where the type-II is not close to any other radio emission features and hence the flux estimate is robust.
The letter tag R rates the relative flux of the burst in 3 – 7 MHz range vs the flux outside of this chosen band. A value of 1 denote good relative flux in comparison to thetypical mean flux level of the overall type-II burst. A value of 0 would mean the 3 – 7 MHz is not a good representative of the mean flux level of the type-II burst in the entire DH band spectrum.

- So F0R1 events are the events with a very reliable estimate which is representative of the overall DH burst event.

Section 2: Associated events
CME

The date, time, angular width and speed of CMEs associated with each burst are provided. The values are taken from CDAW LASCO CME catalog:
https://cdaw.gsfc.nasa.gov/CME_list/
Flare

The source location, NOAA active region number, GOES X-ray flux, reconnection flux estimated using the FRED technique (Gopalswamy, N., et al., 2017) and the unsigned magnetic flux are provided.
SEP

The flux of the major SEP event if any associated with the burst is given. Data is taken from CDAW SEP catalog: https://cdaw.gsfc.nasa.gov/CME_list/sepe/

The Event lists

1. **Full catalog:** All type-II bursts with a radio flux estimate in 3 – 7 MHz band
2. **List 1:** All events in Full catalog with good Xray flux and CME property estimates
3. **List 2:** All events in List 1 with Sxly where x>1, y>1 and F0R1 quality metrics. Also those with reconnection flux estimates.