Table 1 | Properties of Arecibo (1–16) and GBT (GBT-1 and GBT-2) bursts

Burst	Modified Julian date	Width (ms)	*S* (Jy)	*F* (Jy ms)	RM_{obs} (rad m^{-2})	PA_{∞} (°)	RM_{global} (rad m^{-2})	PA_{∞}^{global} (°)
1	57,747.1295649013	0.80	0.9	0.7	$+102,741\pm9$	49 ± 2		
2	57,747.1371866766	0.85	0.3	0.2	$+102,732\pm34$	55 ± 9		
3	57,747.1462710273	0.22	0.8	0.2	$+102,689\pm18$	64 ± 5		
4	57,747.1515739398	0.55	0.2	0.09	–	–		
5	57,747.1544674919	0.76	0.2	0.1	–	–	$+102,708\pm4$	
6	57,747.1602892954	0.03	1.8	0.05	$+102,739\pm35$	49 ± 9		
7	57,747.1603436945	0.31	0.6	0.2	$+102,663\pm33$	71 ± 9		
8	57,747.1658277033	1.36	0.4	0.5	$+102,668\pm18$	67 ± 4		
9	57,747.1663749941	1.92	0.2	0.3	–	–		58 ± 1
10	57,747.1759674338	0.98	0.2	0.2	–	–		
11	57,748.1256436428	0.95	0.1	0.1	–	–		
12	57,748.1535244366	0.42	0.4	0.2	$+102,508\pm35$	63 ± 10		
13	57,748.1552149312	0.78	0.8	0.6	$+102,522\pm17$	59 ± 4	$+102,521\pm4$	
14	57,748.1576076618	0.15	1.2	0.2	$+102,489\pm18$	67 ± 5		
15	57,748.1756968287	0.54	0.4	0.4	$+102,492\pm37$	64 ± 10		
16	57,772.1290302972	0.74	0.8	0.6	$+103,020\pm12$	64 ± 3	$+103,039\pm4$	
GBT-1	57,991.5801286366	0.59	0.4	0.2	$+93,526\pm72$	73 ± 8	$+93,573\pm24$	68 ± 2
GBT-2	57,991.5833032369	0.27	0.9	0.2	$+93,533\pm42$	71 ± 4		

Modified Julian dates are referenced to infinite frequency at the Solar System barycentre; their uncertainties are of the order of the burst widths. Widths have uncertainties of about 10 μs. Peak flux densities *S* and fluences *F* have about 20% fractional uncertainties. Rotation measures are not corrected for redshift, and polarization angles are referenced to infinite frequency. Bursts with no individual rotation measure entry (–) were too weak to reliably fit on their own. The last two columns refer to a global fit of all bursts. All errors are 1σ; see Methods for observational details.

statistical significance and indicate that the rotation measure can vary by at least 10% on half-year timescales (Table 1 and Extended Data Fig. 5).

The Faraday rotation must come almost exclusively from within the host galaxy; the expected Milky Way contribution[17] is -25 ± 80 rad m^{-2}, while estimated intergalactic medium contributions[18] are lower than about 10^2 rad m^{-2}. In the source reference frame, $RM_{src}=RM_{obs}(1+z)^2=+1.46\times10^5$ rad m^{-2} and $+1.33\times10^5$ rad m^{-2} for the Arecibo and GBT data, respectively, where z is the redshift. Without a correspondingly large change in the dispersion measure, the observed variations in rotation measure indicate that the Faraday rotation comes from a compact region with a high magnetic field. Furthermore, that region must be close to FRB 121102 because it is very unlikely that an unrelated small structure with the required high magnetic field is coincidentally in the line of sight.

We can fit all 16 Arecibo bursts with a single polarization angle $PA_{\infty}^{global}=58^{\circ}\pm1^{\circ}$ (referenced to infinite frequency; measured anti-clockwise from North to East) and a single RM_{global} per observation day (Table 1). However, we cannot rule out small changes in the

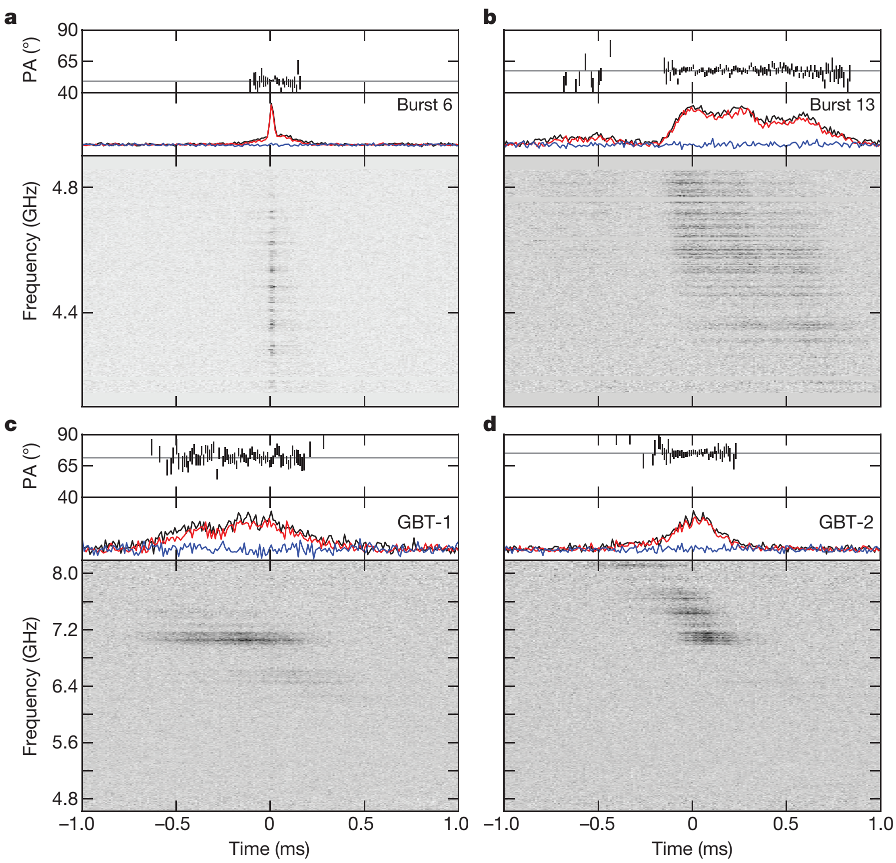

Figure 1 | Polarization angles, pulse profile and spectrum of four bursts. The grey horizontal lines indicate the average polarization angle of each burst. The red and blue lines indicate linear and circular polarization profiles, respectively, while the black line is the total intensity. **a**, **b**, The Arecibo bursts are plotted with time and frequency resolutions of 10.24 μs and 1.56 MHz, respectively. **c**, **d**, The GBT bursts are plotted with time and frequency resolutions of 10.24 μs and 5.86 MHz, respectively.

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