Date & Time (UTC): 20210807_144648 Observer: Dan Layne, Ray Uberecken
Telescope: Main dish 60' (18.3m), Haswell, CO Feed horn: 1420 Mhz; Beamwidth = 0.81°
Receiver: Airspy R2 + GPSDO. Bandwidth = 2.5 Mhz. Frequency = 1420.5 Mhz, RF Gain = 20
Computer: System76 laptop, 8 core, Ubuntu 20.04 Run time: 300 seconds
Software: GnuRadio 3.8, Python3, astro-virgo 3.8
Source Name: **DA122** (NASA HEASARC Catalog)
Source RA, DEC: $04^h\ 02^m\ 18^s$; 36° 25' 00"

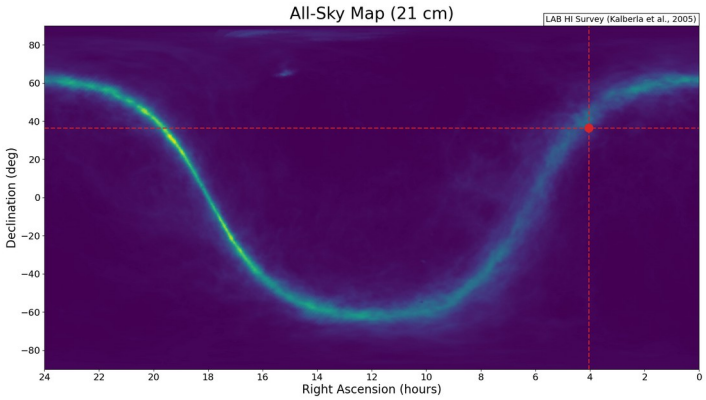

Figure 1: Location of DA122 on 21cm sky map

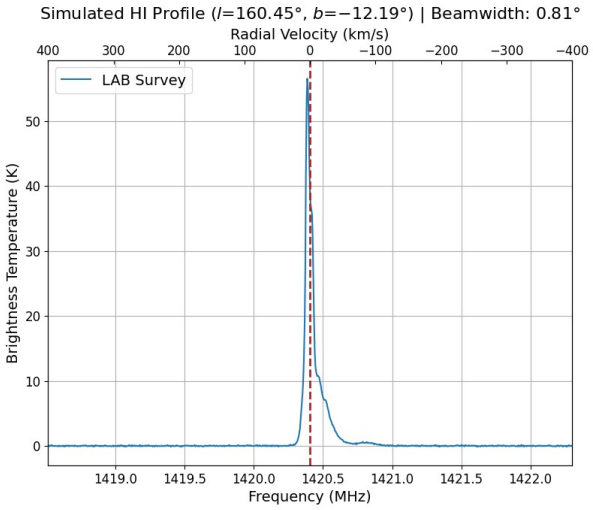

Figure 2: Predicted profile (LAB HI Survey)

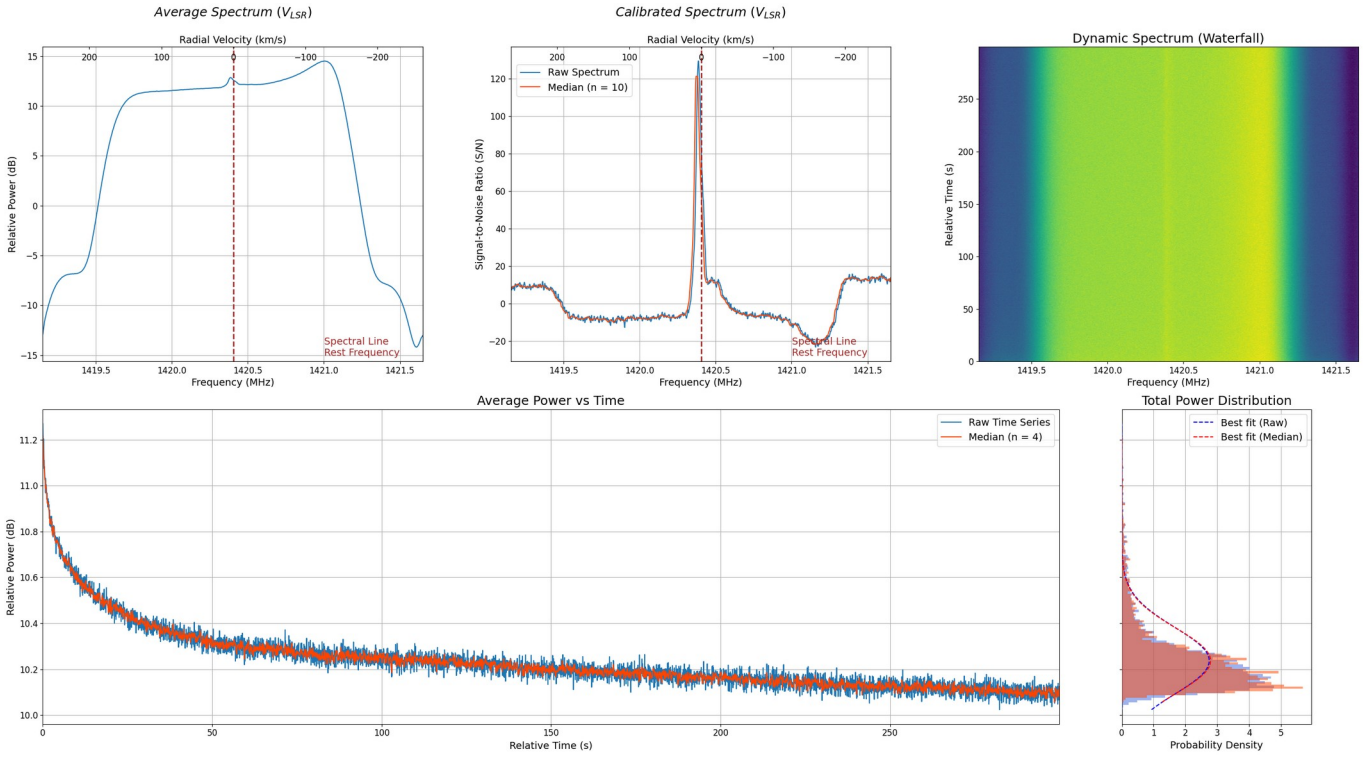

Figure 3: DA122 Observation Results

Discussion: The middle plot above shows the calibrated spectrum in VLSR frame of reference (adjusted for Doppler shift). The calibration subtracts cold sky from observed spectrum (in passband, yielding SNR units). The calibrated profile closely matches the predicted profile in Figure 2.

Date & Time (UTC): 20210807_161322 Observer: Dan Layne, Ray Uberecken
Telescope: Main dish 60' (18.3m), Haswell, CO Feed horn: 1420 Mhz; Beamwidth = 0.81°
Receiver: Airspy R2 + GPSDO. Bandwidth = 2.5 Mhz. Frequency = 1420.5 Mhz, RF Gain = 20
Computer: System76 laptop, 8 core, Ubuntu 20.04 Run time: 300 seconds
Software: GnuRadio 3.8, Python3, astro-virgo 3.8
Source Name: **S7** (IAU calibration source)
Source RA, DEC: $02^h\ 06^m\ 12.6^s$; 60° 32' 54.9"

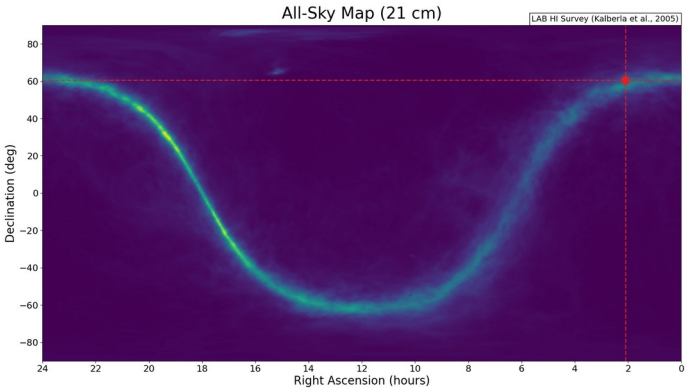

Figure 1: Location of S7 on 21cm sky map

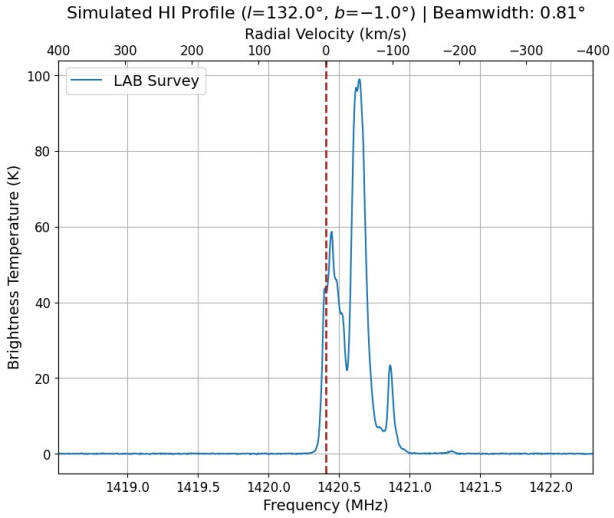

Figure 2: Predicted profile (LAB HI Survey)

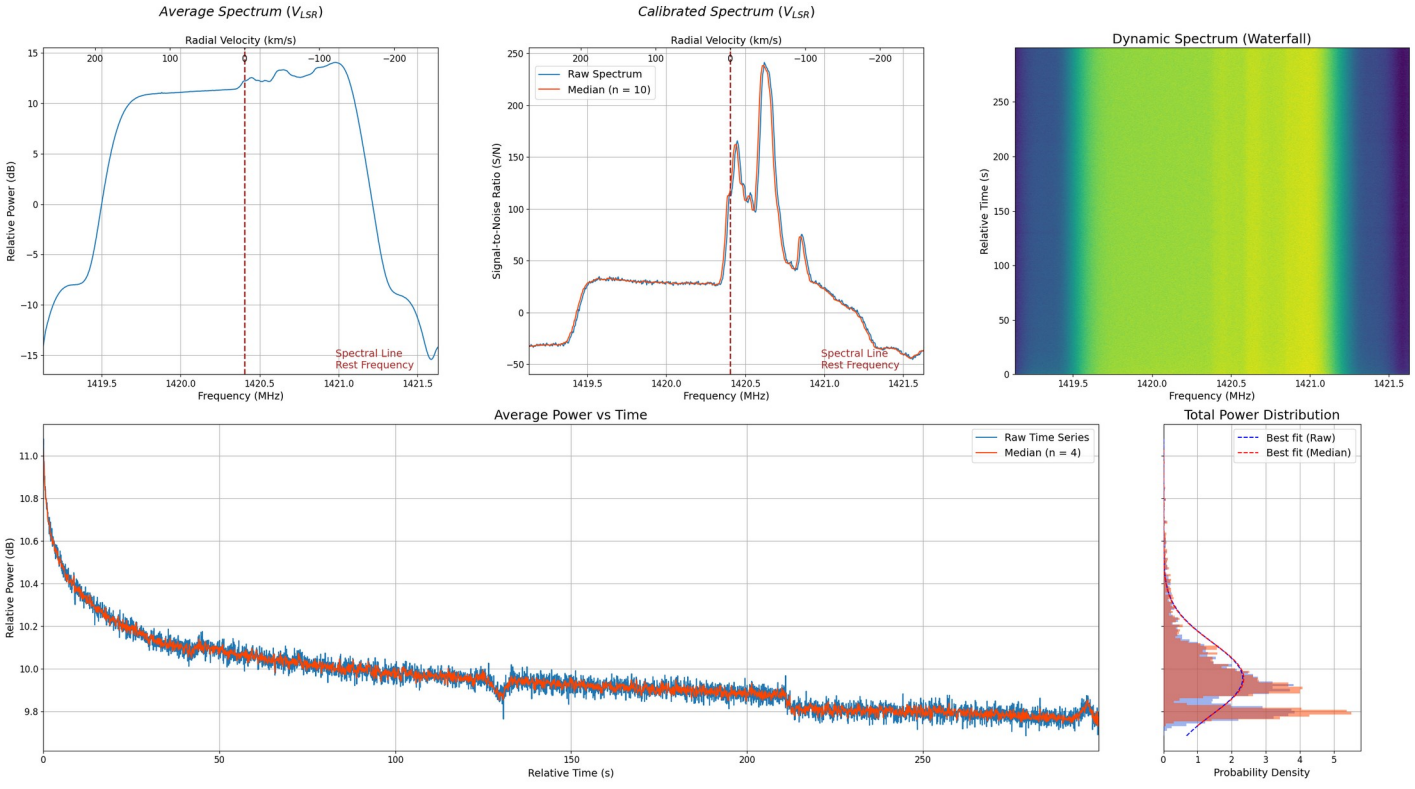

Figure 3: S7 Observation Results

Discussion: The middle plot above shows the calibrated spectrum in VLSR frame of reference (adjusted for Doppler shift). The calibration subtracts cold sky from observed spectrum (in passband, yielding SNR units). The calibrated profile closely matches the predicted profile in Figure 2.