Date & Time (MDT): 20210802_103536 Observers: Glenn Davis, Dan Layne
Telescope: Main dish 60' (18.3m); Beamwidth = 0.81° Feed horn: 1420 Mhz (Steve Plock)
Receiver: Airspy R2 + GPSDO. Bandwidth = 2.5 Mhz. Frequency = 1420.5 Mhz, RF Gain = 10
Computer: System76 laptop, 8 core, Ubuntu 20.04 Run time: 60 seconds
Software: GnuRadio 3.8, Python3, astro-virgo 3.8
Source Name: Cassiopeia A (super nova remnant)
Source RA, DEC: $23^h\ 23^m\ 24^s$; 58° 48.9'

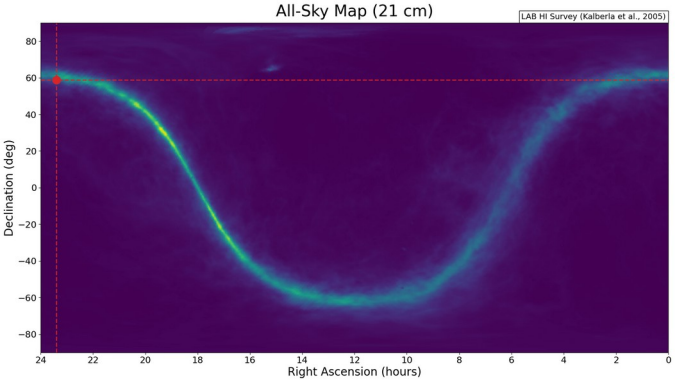

Figure 1: Location of Cass A on 21cm sky map

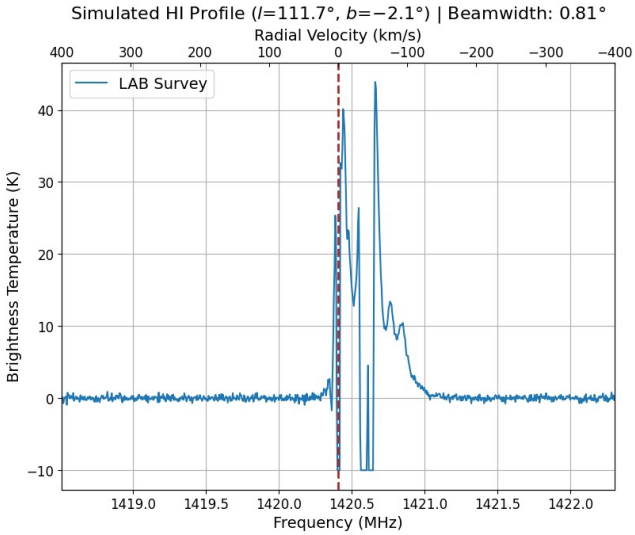

Figure 2: Predicted profile (LAB HI Survey)

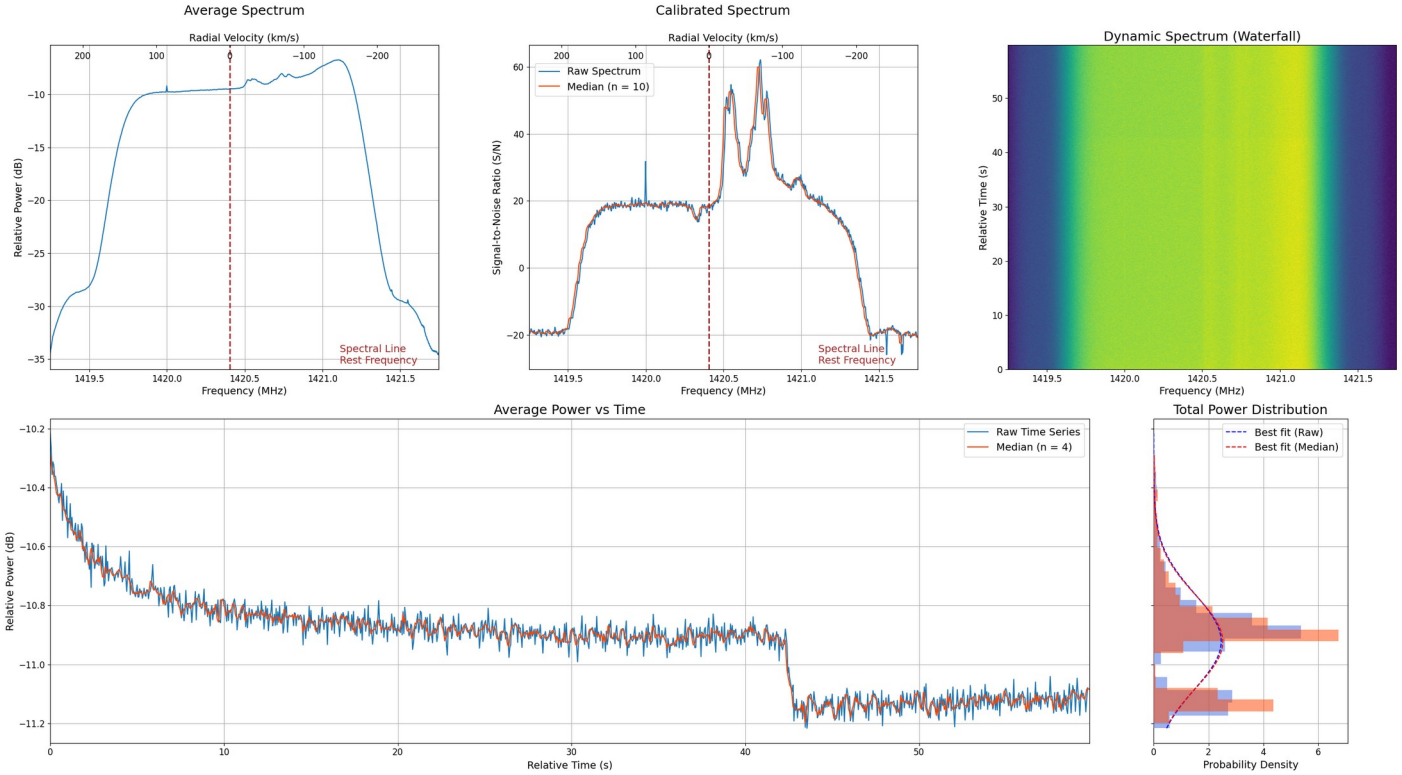

Figure 3 – Observed Results: The middle plot above shows calibrated spectrum. The profile closely matches (but not exactly) the predicted profile for Cassiopeia A in Figure 2 (the charts have different scale). The noise spike at 1420.0 Mhz is a known artifact of the Airspy R2.

Date & Time (MDT): 20210802_124830 Observers: Glenn Davis, Dan Layne
Telescope: Main dish 60' (18.3m); Beamwidth = 0.81° Feed horn: 1420 Mhz (Steve Plock)
Receiver: Airspy R2 + GPSDO. Bandwidth = 2.5 Mhz. Frequency = 1420.5 Mhz, RF Gain = 10
Computer: System76 laptop, 8 core, Ubuntu 20.04 Run time: 60 seconds
Software: GnuRadio 3.8, Python3, astro-virgo 3.8
Source Name: Taurus A (M1) Crab nebula
Source RA, DEC: $05^{h}\ 34^{m}\ 31.94^{s}$; 22° 00′ 52.2"

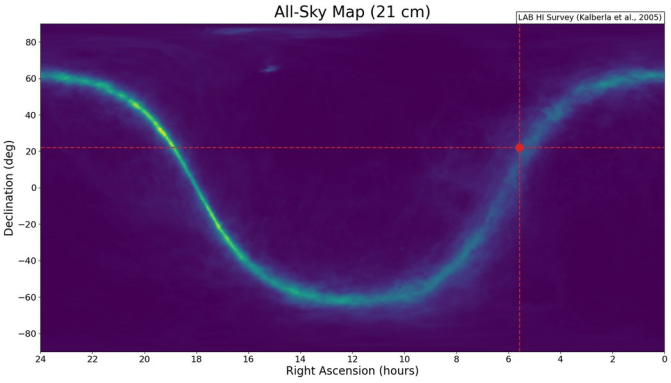

Figure 1: Location of Taurus A on 21cm sky map

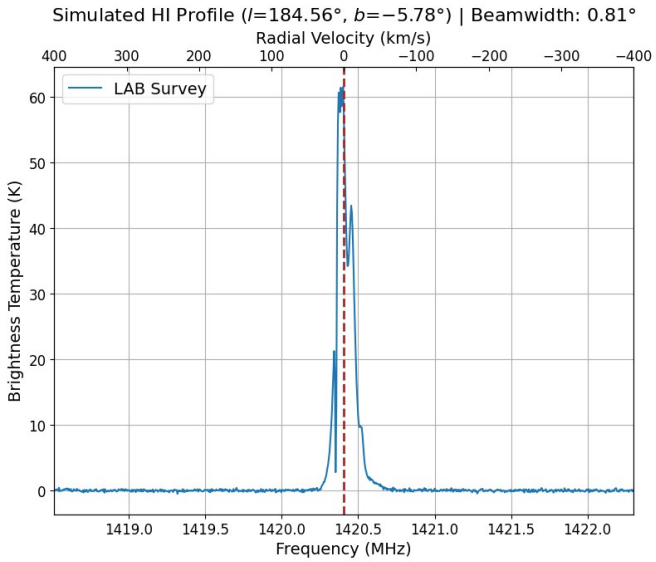

Figure 2: Predicted profile (LAB HI Survey)

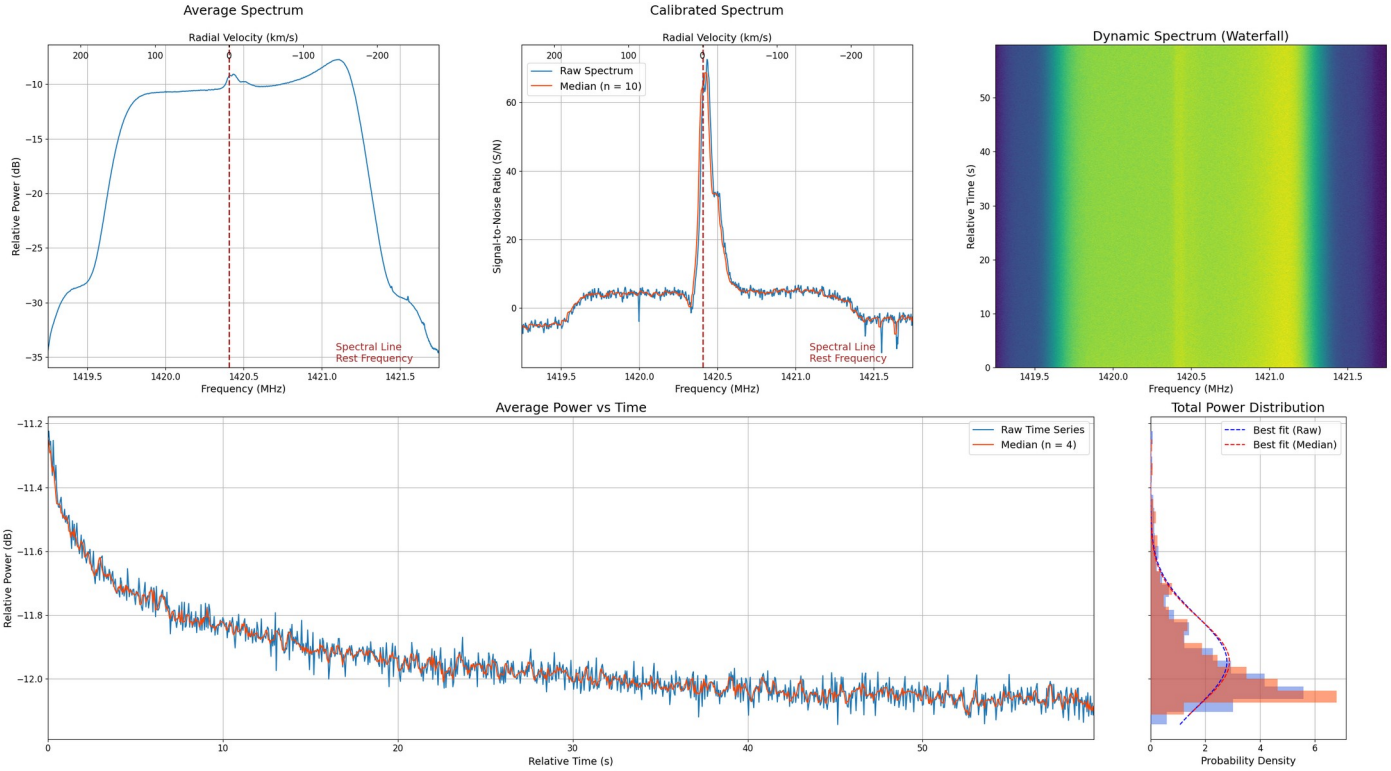

Figure 3 – Observed Results: The middle plot above shows the calibrated spectrum. The profile closely, though not exactly matches the predicted profile for Taurus A (the charts have different scale). Time series and spectral data are also available in spreadsheet (.csv) format.