Investigating Known Pulsars J1903-0848, J0944-1354, J1311-1228

Team Hewish

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Background

Pulsars are neutron stars that generally exhibit these qualities:

- Their radius is approximately 10 km in size
- They have mass equal to ~1.4 solar mass
- Extremely dense, comparable to that of an atomic nucleus
- Extremely rapid spin, can exceed rates of 700Hz
- Extreme magnetic fields: 1x10^12 than that of the earth

Introduction

During our dataset evaluation, our team found 3 previously Known Pulsars

J-Name	DM (pc/cm^3)	Period (ms)
J1903-0848	65.85	887.326
J0944-1354	12.56	570.286
J1311-1228	36.089	447.57

Aim

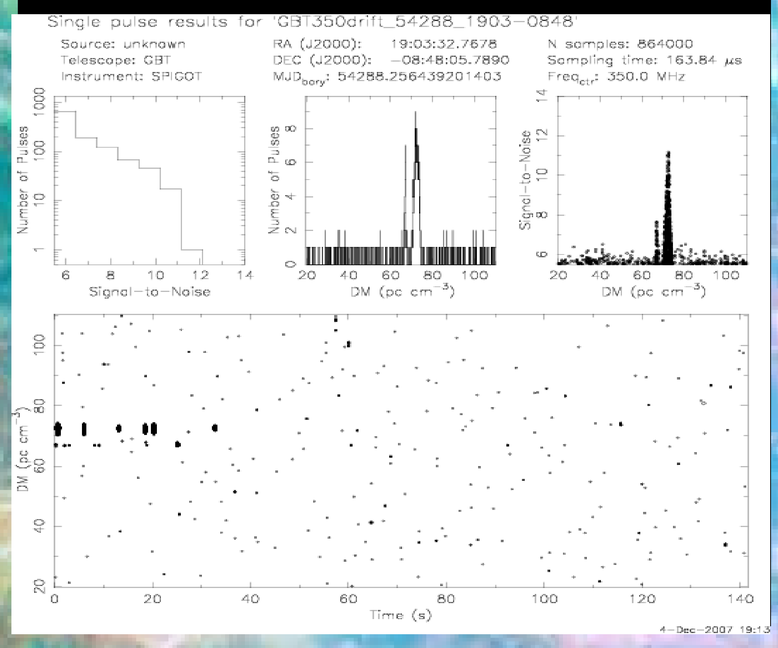
During the evaluation of pulsar J1903-0632's single pulse plots we came across two pulses at two very different DMs. Our goal is to find out if another pulsar is located behind J1903-0848, and also to examine our other known pulsars more carefully.

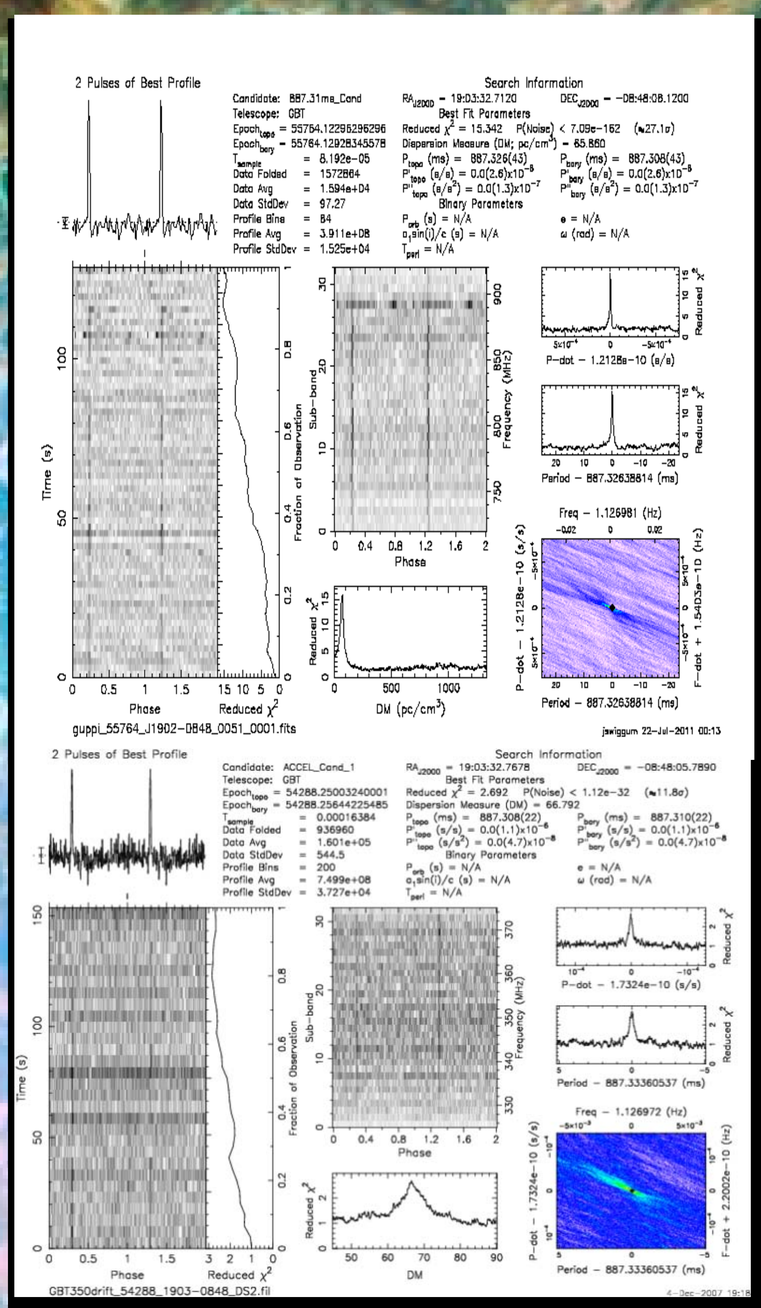
Method

After determining which plots were pulsar candidates We used the GBT to investigate J1903-0848, J0944-1354, and J1311-1228. The candidate J1903-0848 intrigued us because we had seen two separate pulsars on the single pulse plot one at the DM of ~65 and the other at the DM of ~75.

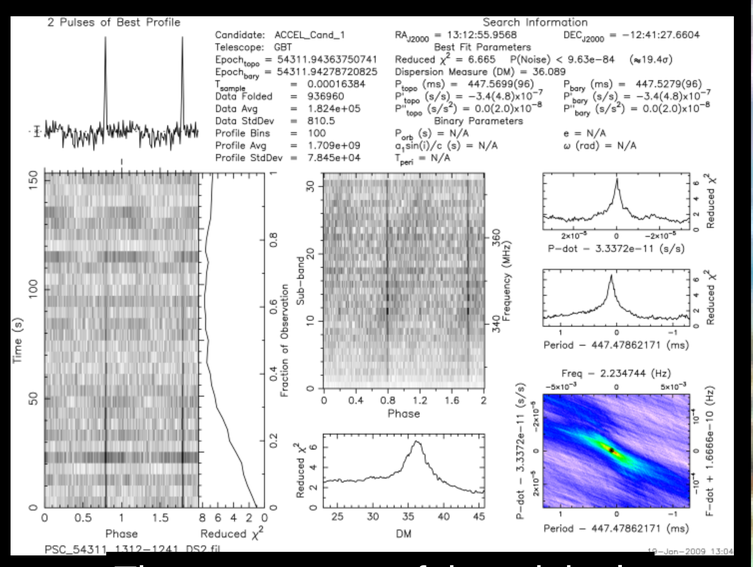
Results

Our results came back inconclusive. We did not see any other pulse emitted other than that of J1903-0632. All our other data was noise. WE Determined this was so because the Dec was wrong on the new plot and came back as –06:32 instead having the Dec of -08:48

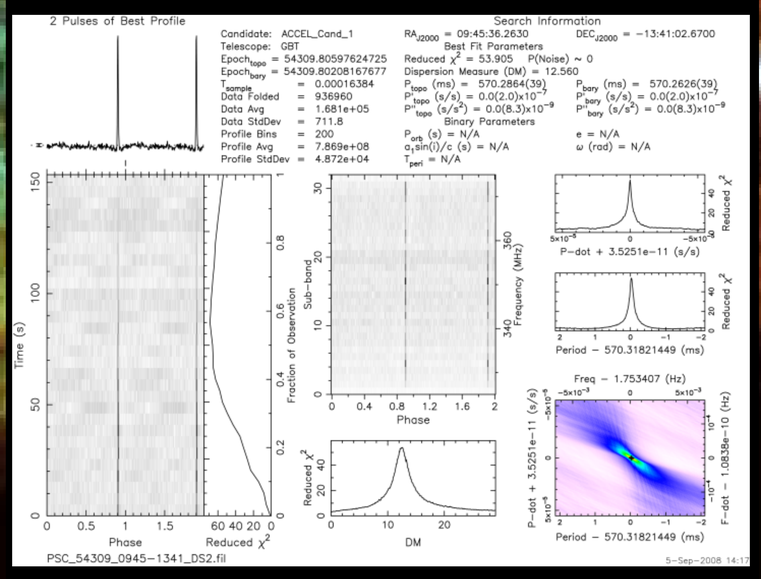




These are our comparisons of the data from the original plots and the GBT data we collected the bottom set is from the GBT and the top is from the original plots from the database.



These were two of the original plots from the database that we found, sadly we encountered RFI when we visited the GBT and couldn't conclude anything further.



Conclusion

Without data of the Pulsar J1903-0848 , we cannot conclude existence of the , However, we *can* confirm the position of the pulsars J0944-1354 and J1311-1228. Also in future investigations we would like to try gridding around RA:19:03 Dec: -08:48 is located and try to find the object we saw in the single pulse plots from the database.

Acknowledgements

NRAO — Sarah Scoles

PSC — Joe Swiggum

Sue Ann — Peter Gentile