

Lab AA652

Experiment 7

Fast Fourier Transform

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1 Objective

To find the period of a pulsar by Fourier analysis.

2 Discussion

The following figure is the data of a pulsar J0820-1350 at a frequency 317MHz.

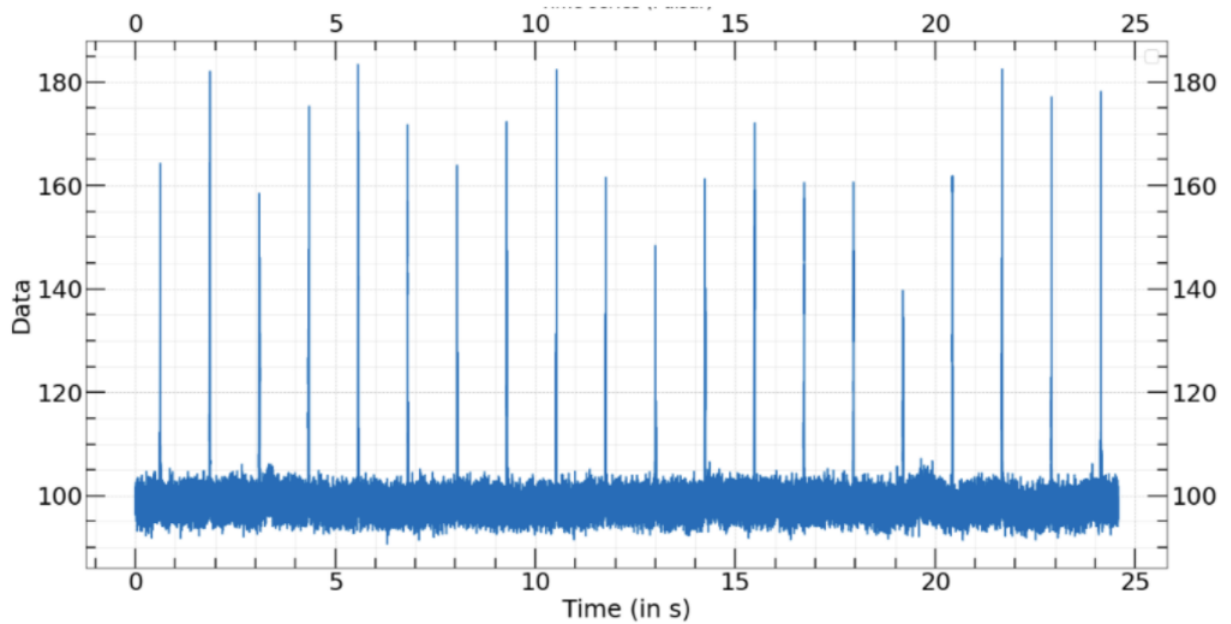


Figure 1: The time series data

Applying FFT to the data the power spectrum is plotted and the peak of the power comes out to be at a frequency indicated in the following figure.

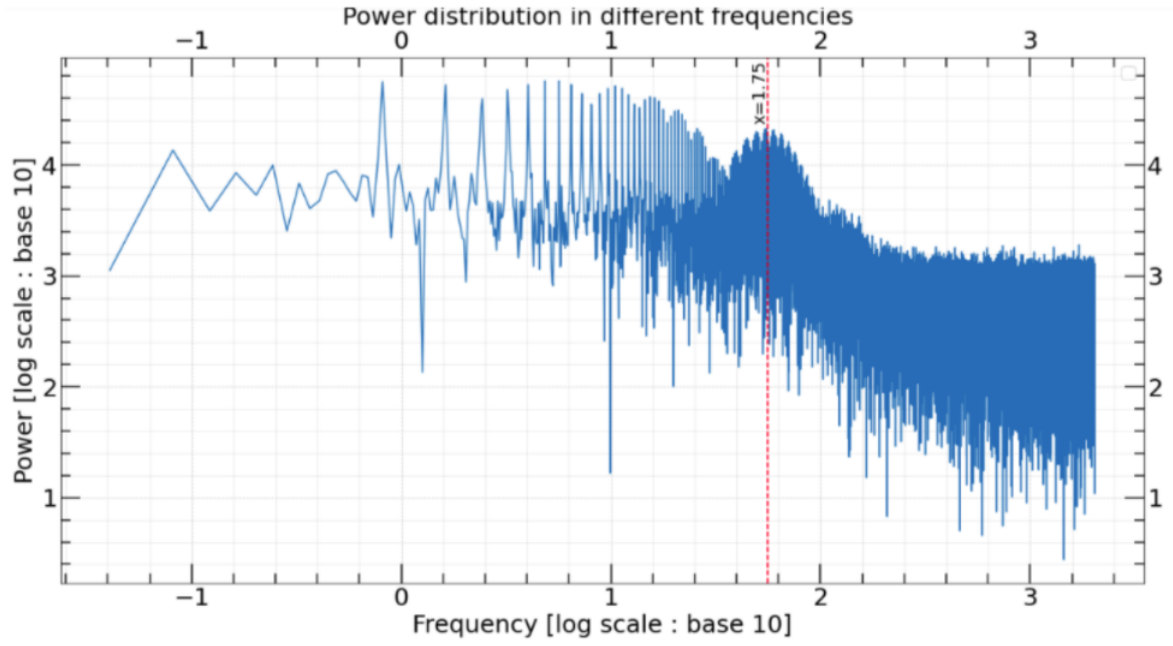


Figure 2: The Power spectrum of the data

The frequency is about ~ 56.2 Hz.

3 Conclusion

FFT is a very useful tool to find the pulse frequency of a weak signal pulsar. The resolution of the time series depends on the length of the time series. While performing this kind of analysis one should also be aware of the critical sampling frequency or the Nyquist frequency to have a faithful and proper FFT result.