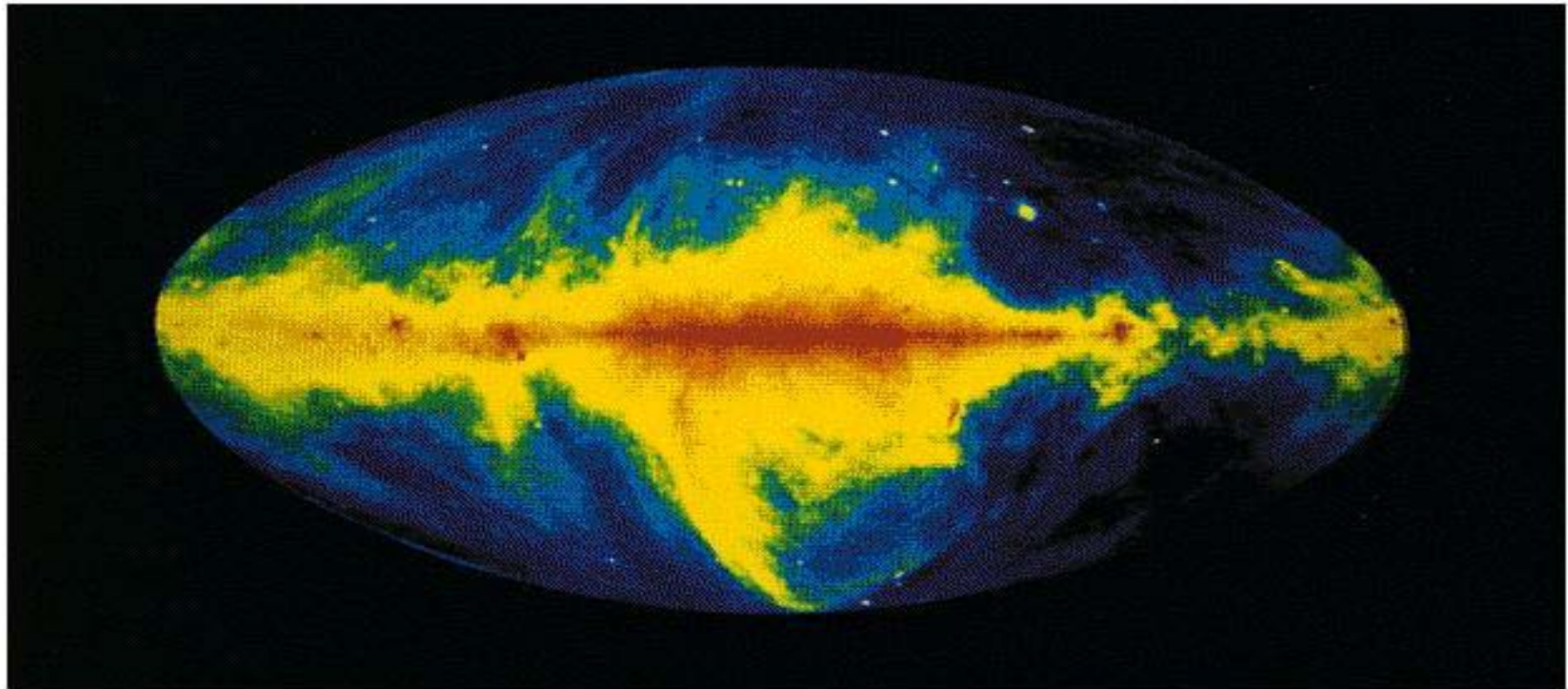


Session Three: Pulsar Data and Dispersion Measure

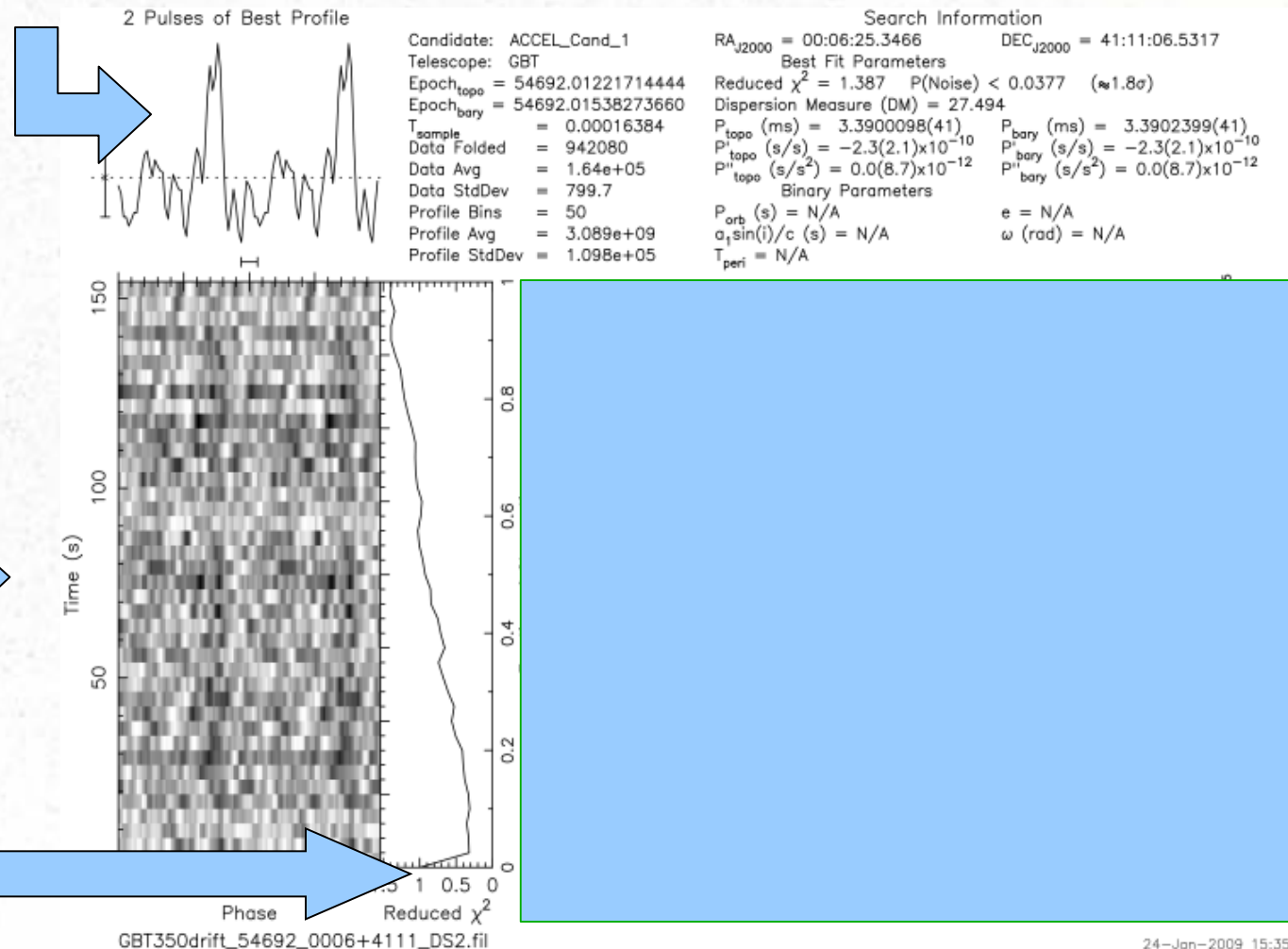


Sue Ann Heatherly
and
Sarah Scoles



Plot Review

Average pulse profile

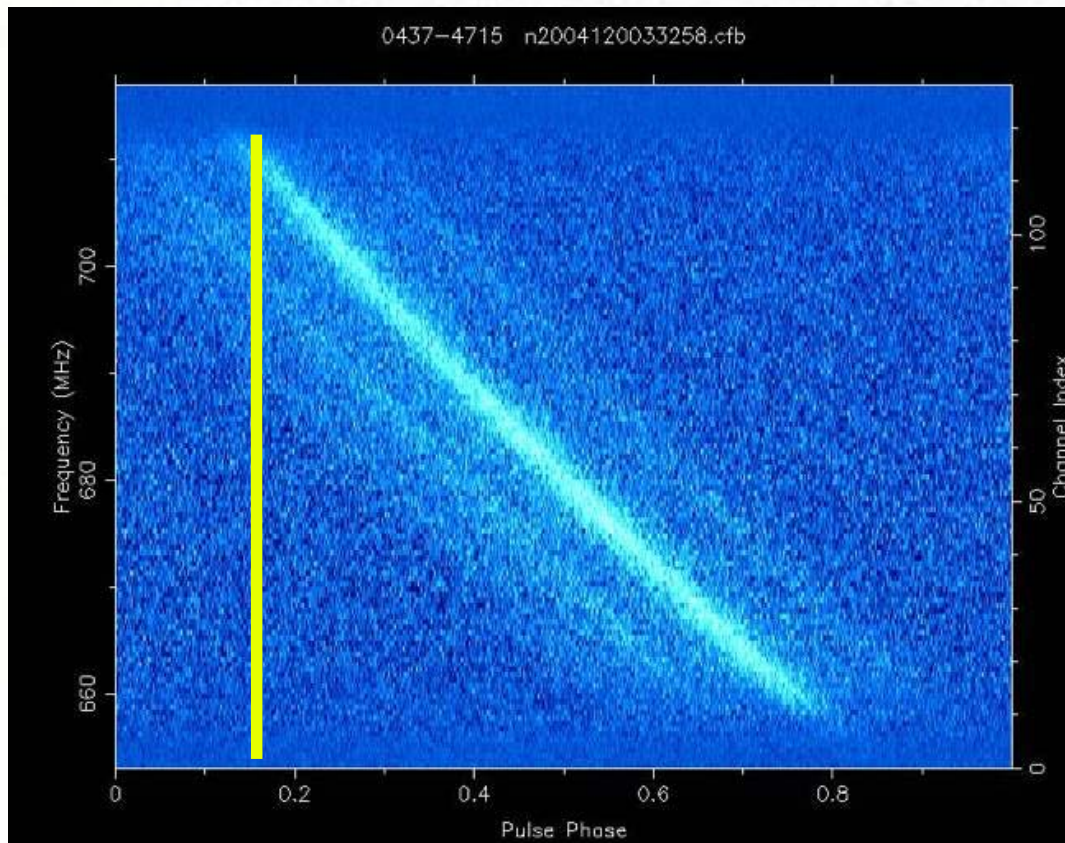




CLEA Homework: Questions

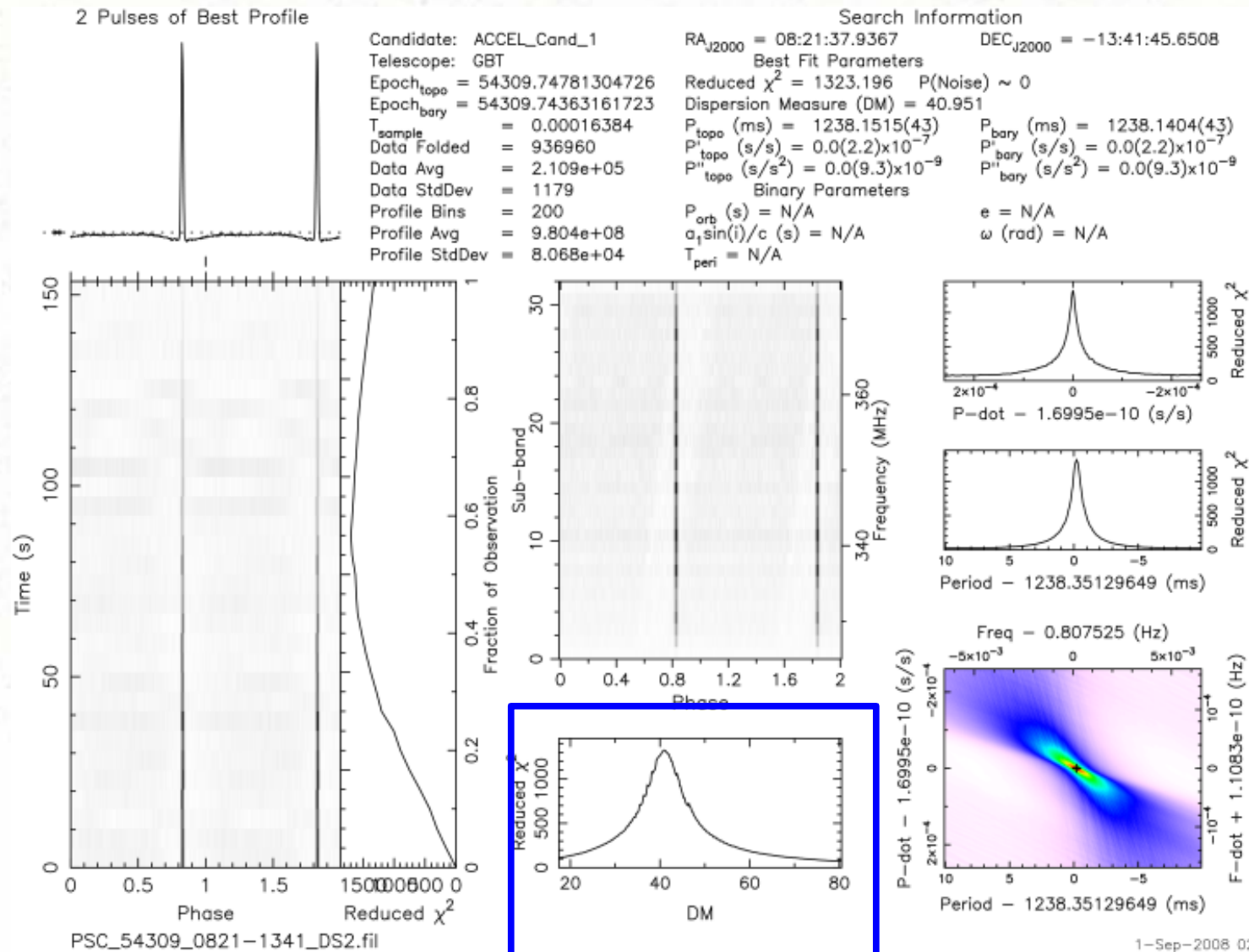
1. How is a pulsar's period measured?
2. Does a pulsar's **period** change if you observe at different frequencies?
3. Does the pulsar's **intensity** change if you observe at different frequencies?
4. Does a pulse's **time of arrival** change if you observe at different frequencies?
5. What is **dispersion measure**, and how does it relate to time of arrival?

Dispersion Measure

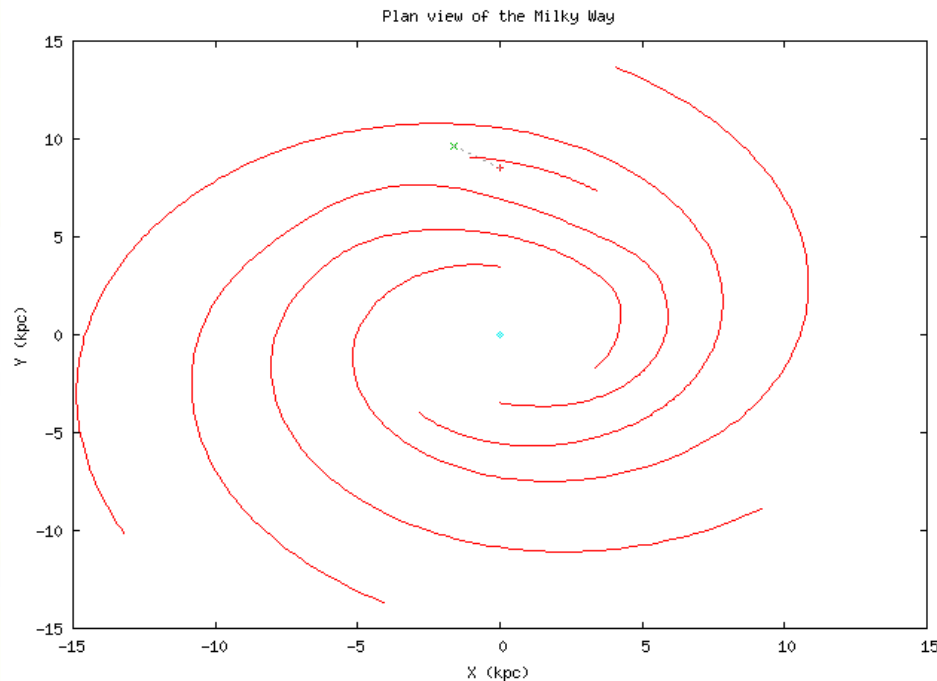


- Low frequencies take longer to get here than high frequencies because of **interactions with electrons**
- The pulses appear smeared out over time
- Dispersion measure tells us how “smeared” the pulse is

The DM plot



What makes a DM “reasonable”?



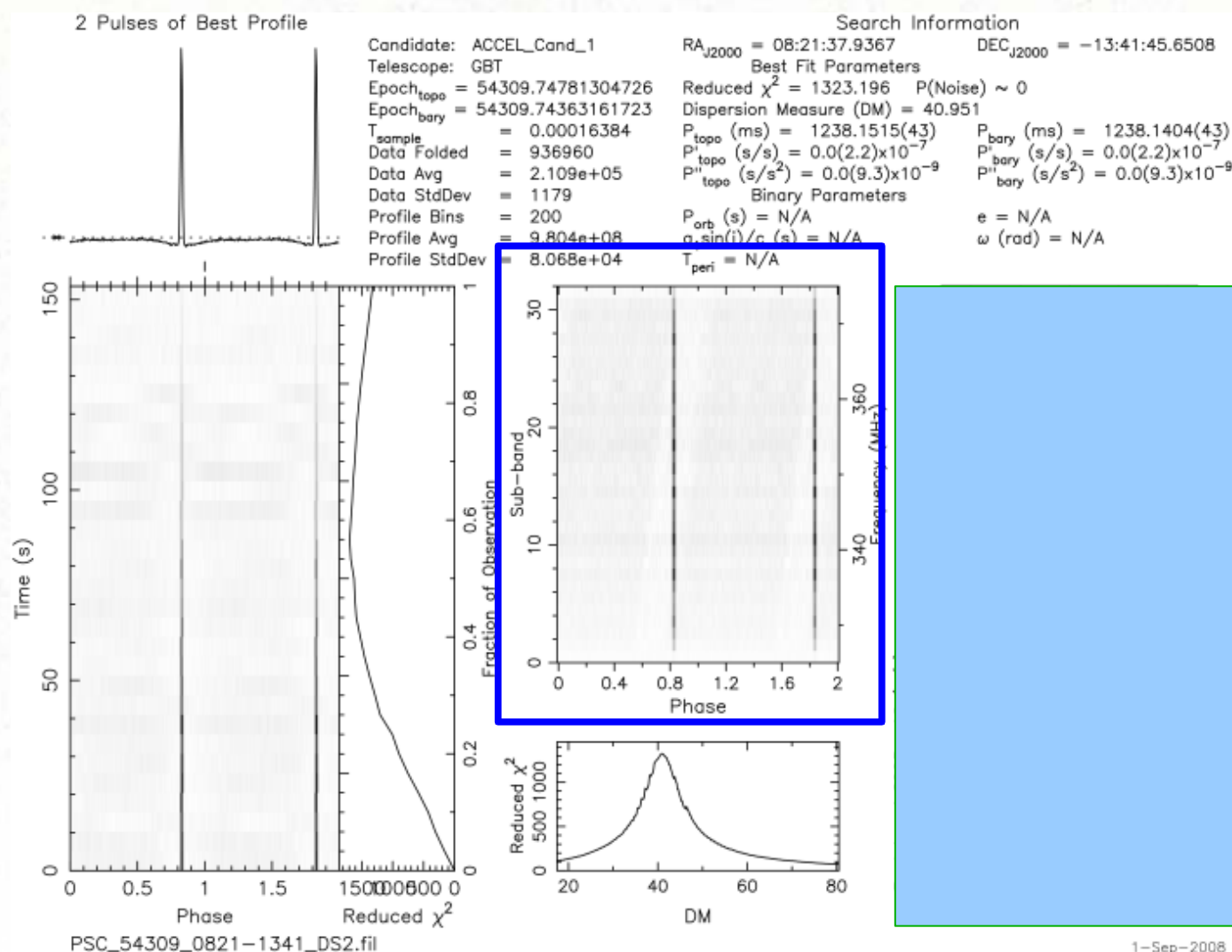
1. Not so large that the pulsar would be located outside the Milky Way
2. Not so small that the pulsar would be located on Earth

For the plot in the previous slide:

“For Galactic longitude 235.0 degrees and latitude 13.3 degrees, and a dispersion measure of $41.0 \text{ cm}^{-3} \text{ pc}$, the estimated distance to your source is 2.0 kpc.

The maximum DM predicted by the model for this direction is $97.7 \text{ cm}^{-3} \text{ pc}$.”

The Sub-band plot



The P and P-dot plots

