**Online Training Overview**

**Orientation**

Education Goal: Introduce pulsars and the Pulsar Search Collaboratory.

The Powerpoint presentation I used in the orientation session and the Homework for the orientation session are posted [here](https://sites.google.com/a/pulsarsearchcollaboratory.com/online-sessions-2012/home/plot-inquiry), on the Plot Inquiry page.

*Assignment 1 ( 3 plots) These are the kinds of plots your students will be analyzing as part of the PSC. List all the things you notice about these plots, from trends that you see in multiple plots to specific observations about a single plot. Also list all questions you have, including basic ones like "What does that term mean?" Clicking on an image will make it bigger!

Post your observations and your questions as comments below the plots. If you see your observation or question listed already, there's no need to repeat it. Just add to what's there.*

**Session One: Pulsar Plots I.**
 **Education goals:** Understand the time domain and pulse profile sub-plots from the FFT plots.

**Technology goals:** Use the PSC website to post comments and create a webpage.

Your assignment for session 1, links to Powerpoint, and the Blackboard session are posted [here](https://sites.google.com/a/pulsarsearchcollaboratory.com/online-sessions-2012/home/session-1).

***Assignment:****1) Embark on a short webquest about  pulsars. By searching the internet, find interesting and new information about pulsars and how astronomers study them. Then, create a webpage to record what you find. It will be visible to the other 2011 PSC teachers and the staff, but not to the rest of the PSC. Be sure to cite your references. To create a webpage:*

* *Click on the button at the top right corner of this page that says "Create New Page"*
* *In the field Page Name, put a relevant title that includes your name.*
* *Then click the button for "Put page under Online Session 1 Pulsar Basics"*
* *This will create a new page that has room for comments, as well as a link at the bottom of the page.*
* *List your answers, and useful websites here, and insert at least one image.*
* *Save your page.*

*2) Post a Comment below to introduce yourself to the rest of the gang. Include the urls of a useful website, online video or other online material on pulsars that is NOT listed here.*

***Webquest: Here are some sites to get you started and some questions to investigate:*** *1.  What are the take away messages you gain from first hand accounts of early pulsar discoveries?*

* *The Discovery of Pulsars:* [*http://www.bigear.org/vol1no1/burnell.htm*](http://www.google.com/url?q=http%3A%2F%2Fwww.bigear.org%2Fvol1no1%2Fburnell.htm&sa=D&sntz=1&usg=AFrqEzfAZck7xF1jmZKwCM2gXTwrKM70tA)
* *How we learned what pulsars were:* [*http://www.aip.org/history/mod/pulsar/pulsar1/01.html*](http://www.google.com/url?q=http%3A%2F%2Fwww.aip.org%2Fhistory%2Fmod%2Fpulsar%2Fpulsar1%2F01.html&sa=D&sntz=1&usg=AFrqEzfpvJaJnKJNynO3uh072Oe84Qe02g)

*2. What are Pulsars? List 3-5 cool pulsar facts you learned from these websites.*

* [*http://www-outreach.phy.cam.ac.uk/camphy/pulsars/pulsars\_index.htm*](http://www.google.com/url?q=http%3A%2F%2Fwww-outreach.phy.cam.ac.uk%2Fcamphy%2Fpulsars%2Fpulsars_index.htm&sa=D&sntz=1&usg=AFrqEzcgokwoo06vz86FuNXSTkO53kMwYA)
* [*http://www.jb.man.ac.uk/research/pulsar/Education/index.html*](http://www.google.com/url?q=http%3A%2F%2Fwww.jb.man.ac.uk%2Fresearch%2Fpulsar%2FEducation%2Findex.html&sa=D&sntz=1&usg=AFrqEzd5n203ng7jcgO0UoDMRE9ZqqB4RQ)
* [*http://relativity.livingreviews.org/Articles/lrr-2008-8/*](http://www.google.com/url?q=http%3A%2F%2Frelativity.livingreviews.org%2FArticles%2Flrr-2008-8%2F&sa=D&sntz=1&usg=AFrqEzfUtcallee_XGX0FaGZW_vMXx6few)

*3. Why is pulsar astronomy important?*

* *Most massive Neutron Star yet found:* [*http://www.nrao.edu/pr/2010/bigns/*](http://www.google.com/url?q=http%3A%2F%2Fwww.nrao.edu%2Fpr%2F2010%2Fbigns%2F&sa=D&sntz=1&usg=AFrqEzfwa-JgQ-o574Fvp9QXJrlU8BlSbw)
* *Double Pulsar discovery:* [*http://www.jb.man.ac.uk/news/doublepulsar2/*](http://www.google.com/url?q=http%3A%2F%2Fwww.jb.man.ac.uk%2Fnews%2Fdoublepulsar2%2F&sa=D&sntz=1&usg=AFrqEzcLC1kYkFQHOv45EuuN9MNF8HPkeQ)
* *The race for Gravity waves* [*http://www.nature.com/news/2010/100113/full/463147a.html*](http://www.google.com/url?q=http%3A%2F%2Fwww.nature.com%2Fnews%2F2010%2F100113%2Ffull%2F463147a.html&sa=D&sntz=1&usg=AFrqEzeUyhT61LZhmA8EWpT7bnitVOWrbg)
* *Podcast with Pulsar Astronomer Scott Ransom* [*http://www.gb.nrao.edu/epo/mra/scott.mp3*](http://www.google.com/url?q=http%3A%2F%2Fwww.gb.nrao.edu%2Fepo%2Fmra%2Fscott.mp3&sa=D&sntz=1&usg=AFrqEzfnZs1qz8OKdeRCLJ2vHcUiLx-eVQ)

*4. What problems do pulsar astronomers face? Could you do pulsar astronomy where you live?*

* *Spectrum allocation chart:* [*http://www.ntia.doc.gov/osmhome/allochrt.html*](http://www.google.com/url?q=http%3A%2F%2Fwww.ntia.doc.gov%2Fosmhome%2Fallochrt.html&sa=D&sntz=1&usg=AFrqEzch2Lm_kntViUhsJF4SCSMHl8aPnQ)
* *Spectrum use details:* [*http://www.jneuhaus.com/fccindex/spectrum.html*](http://www.google.com/url?q=http%3A%2F%2Fwww.jneuhaus.com%2Ffccindex%2Fspectrum.html&sa=D&sntz=1&usg=AFrqEzc8oX9Dqj5KEHhOULFMiJYXsTaKHQ)
* *FCC wireless services description:* [*http://wireless.fcc.gov/services/index.htm?job=wtb\_services\_home*](http://www.google.com/url?q=http%3A%2F%2Fwireless.fcc.gov%2Fservices%2Findex.htm%3Fjob%3Dwtb_services_home&sa=D&sntz=1&usg=AFrqEzcjgNpoERq5diY0QLECY2j8WcqthA)
* *FCC Database search:* [*http://wireless2.fcc.gov/UlsApp/UlsSearch/results.jsp*](http://www.google.com/url?q=http%3A%2F%2Fwireless2.fcc.gov%2FUlsApp%2FUlsSearch%2Fresults.jsp&sa=D&sntz=1&usg=AFrqEzc6DHKAJcXuOeUeKZfwHa9jh9NHTA)
* *RFI page at the NRAO:* [*http://www.gb.nrao.edu/IPG/*](http://www.google.com/url?q=http%3A%2F%2Fwww.gb.nrao.edu%2FIPG%2F&sa=D&sntz=1&usg=AFrqEzeup5jvX9v62UX38SvmwA-ebdB5UQ)

**Session Two: Dispersion Measure.**

**Education goals:** Learn about dispersion measure using CLEA.

**Technology goals:** Download, install, and use CLEA.
Link to the Blackboard recording (you need the first hour only!!) is [here](https://www.google.com/url?q=https%3A%2F%2Fsas.elluminate.com%2Fp.jnlp%3Fpsid%3D2012-06-11.1527.M.EA239DD0594D655EE265812A35F21A.vcr%26sid%3Dvoffice&sa=D&sntz=1&usg=AFrqEzfz5ZmGtDGk11ZcD32gKci7xmRMqw)
The assignment for Session 2 and links to the Powerpoint presentation are posted [here](https://sites.google.com/a/pulsarsearchcollaboratory.com/online-sessions-2012/home/session-2).

*Assignment: Download and install CLEA:* [*Radio Astronomy of Pulsars*](http://www.google.com/url?q=http%3A%2F%2Fwww3.gettysburg.edu%2F%7Emarschal%2Fclea%2Fplsrlab.html&sa=D&sntz=1&usg=AFrqEzeiHlwzuDyECmZkfX2MCSyDP4Ozlw) *Review the step-by-step instructions for the CLEA pulsar lab, which are in the Powerpoint attached below. If you need it, the manual is* *here**.

Complete the exercise found* [*here*](https://sites.google.com/a/pulsarsearchcollaboratory.com/online-sessions-2012/home/session-2/clea-exercise)*.*

**Session Three Pulsar Plots II**

 **Education goals:**
Learn about the sub-band, dispersion measure, and P-dot sub-plots;
understand what dispersion measure is and how it can tell us where pulsars are located within our galaxy.

**Technology goals:**
Use the DM tool on the PSC website to determine whether a plot has a reasonable DM.

The Blackboard Collaborate Session Recording is [here](https://www.google.com/url?q=https%3A%2F%2Fsas.elluminate.com%2Fp.jnlp%3Fpsid%3D2012-06-18.1522.M.EA239DD0594D655EE265812A35F21A.vcr%26sid%3Dvoffice&sa=D&sntz=1&usg=AFrqEzefNx2RE2XTEWAu6zsuJOejXXAT7Q)

The Powerpoint and assignment for Session 3 is posted [here](https://sites.google.com/a/pulsarsearchcollaboratory.com/online-sessions-2012/home/session-3).

*Assignment: Go to the PSC database and click on the Guest site. Take a look at the three data plots. You can grade the subplots (1 is bad 3 is good) Which of the three plots are a pulsar? Why do you think so? Describe what you see the subplots in the comments below.*

*If you think you may have a pulsar, is the DM reasonable? Try out the DM checker.*

**Session Four: Single-Pulse Plots.**

**Education goals:** Learn to interpret all subplots in the single-pulse plots.

**Technology goals:** Use the teacher database to rank subplots in test1.

The Powerpoint and assignment for Session 4 is posted [here](https://sites.google.com/a/pulsarsearchcollaboratory.com/online-sessions-2012/home/session-4).

*Assignment:*

1. *Go to* [*http://psrsearch.wvu.edu/pscsummer/*](http://www.google.com/url?q=http%3A%2F%2Fpsrsearch.wvu.edu%2Fpscsummer%2F&sa=D&sntz=1&usg=AFrqEzex61s84ngue2WzLB3puPZMk1lVxg)*.*
2. *Type firstname.lastname in the username field.*
3. *Type your PSC website password into the password field.*
4. *Click on the test1 link. It will be at the bottom of the page, and it's the only active link in the leftmost column.*
5. *Rank each subplot in the prepfold and single-pulse plots with numbers 1-3. If a plot looks like a pulsar, check to see if it's in the ATNF catalog, and if it is, click 'known pulsar' and write the name (the one that looks like J1234-5678).*
* *1 means, "This subplot does not look like it contains a pulsar candidate."*
* *2 means, "This subplot looks somewhat like it could contain a pulsar candidate."*
* *3 means, "This subplot looks like it contains a pulsar candidate."*

*After you have submitted test1, you will receive email comments so that you can make changes and resubmit.*