

# NRAO



National Radio Astronomy Observatory  
**Green Bank Science Center**  
**2010 Brochure**





Experience the Green Bank Science Center exhibit hall and its many hands-on displays .

## Green Bank Science Center

Come enjoy the Green Bank Science Center, featuring hands-on exhibits and displays that introduce you to the science of radio astronomy while you play! Discover what radio waves are, how the Green Bank Telescope works, and what radio astronomers are learning about the Universe. Admission to the Science Center is free!

The Green Bank Science Center is the starting point for your free guided tour of the *National Radio Astronomy Observatory* (NRAO) site. Browse the Galaxy Gift Shop or grab a bite to eat at the Starlight Cafe before or after your tour. The free guided tour includes educational demonstrations, a film on radio astronomy and a bus tour through the research telescope area. The bus tour includes a final stop at the Robert C. Byrd Green Bank Telescope, the largest fully steerable radio telescope in the world!



Simple film cameras are welcome all over the NRAO site, but digital cameras, or 35mm cameras with advanced electronics, cannot be used near the telescopes. Digital cameras and other electronics create radio pollution which can ruin astronomers' data. We thank you for your understanding and for helping us provide quiet skies at Green Bank.

Visit the Green Bank Science Center anytime of the year!

### Winter & Spring Hours

November 1st through Friday before Memorial Day

Open Thursday – Monday\*  
10:00 a.m. — 5:00 p.m.

Starlight Cafe open 11:00 a.m. – 5:00 p.m.

### FREE Public Tours

11:00 a.m., 1:00 p.m. & 3:00 p.m.

\*Closed: Thanksgiving Day, Friday after Thanksgiving, Christmas Eve, Christmas Day, New Years Eve, New Years Day, and Easter Sunday

### Summer Hours

Memorial Day weekend through Labor Day

Open Daily  
8:30 a.m. — 7:00 p.m.

Starlight Cafe open 11:00 a.m. – 7:00 p.m.

### FREE Public Tours

at the top of each hour  
9:00 a.m. — 6:00 p.m.

### Fall Hours

Tuesday after Labor Day through October

Open Thursday – Monday  
8:30 a.m. — 7:00 p.m.

Starlight Cafe open 11:00 a.m. – 7:00 p.m.

### FREE Public Tours

at the top of each hour  
9:00 a.m. — 6:00 p.m.

Schedule subject to change without notice.

## Organized Group Tours

**Motor coach groups** are welcome. Tours can be scheduled any day of the week. For your convenience, and to guarantee a guided tour, please make advance reservations. A \$2 fee per person is required for motor coach tours. Group meals also available.

**School and scout groups** are welcome. Tours can be scheduled any day of the week. We can tailor a program to your group. Tour reservations are free for organized school and scout groups, but please call in advance to make tour arrangements.

**Informal groups** are welcome. If your group is traveling by car, we will incorporate your group into the regularly scheduled public tours. If you have a group of 20 or more people, we appreciate knowing in advance.

For additional group details and reservations, contact the tour director by calling **(304) 456-2164** or by email at [gbt-tours@nrao.edu](mailto:gbt-tours@nrao.edu)

For more information visit: [www.nrao.edu/index.php/learn/gbsc](http://www.nrao.edu/index.php/learn/gbsc)

# NRAO 2010 Special Events Calendar

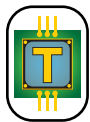
In addition to the great day to day exhibits and free tours, the Green Bank Science Center offers additional enhanced learning activities every month. Use the following calendar to plan your next enhanced visit to NRAO. All events and activities take place at the Green Bank Science Center.



## Monthly Star Party and Themed Activities

*All star parties begin at dusk, themed activities at 2:30 p.m. and 4:30 p.m.*

**These event are FREE. No reservations required.** NRAO staff will introduce guests to the night sky. At dark, join us on the Star Party Patio for observing with optical telescopes. Cloudy skies will cancel night sky viewing. On star party days a featured monthly activity will be offered to the public at 2:30 p.m. and 4:30 p.m. These activities will be 30 – 60 minutes in length.



## High Tech Thursdays

**November through May**

2nd Thursday of each month at 3:30 p.m.

**June through October**

2nd & 4th Thursday of each month at 3:30 p.m.

**\$3 per person; reservations required.**

Join us for a guided tour through parts of NRAO normally off limits to visitors, like lab areas where sensitive receivers are designed and built. Space is limited to 15 participants per program. Time: approximately 1 hour.



## Star Lab Fridays

**Every Friday at 2:00 p.m.**

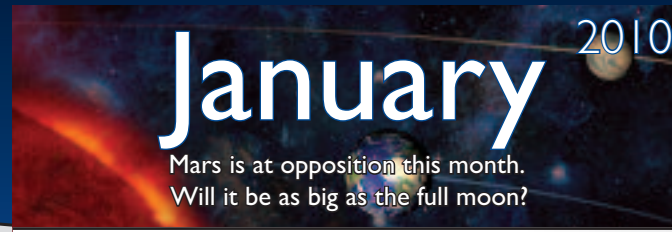
**\$3 per person; reservations required.**

Guests will gather under a planetarium balloon for a fascinating look at the night sky. Space is limited to 15 participants per program. Time: approximately 1 hour.

**For event reservations, call**

**304-456-2150**

Dates subject to change without notice.



- 8 Star Lab – 2:00 p.m. reservations required
- 14 High Tech Tour – 3:30 p.m. reservations required
- 15 Star Lab – 2:00 p.m. reservations required
- 16 Star Party & Themed Activity 2:30 p.m. & 4:30 p.m.
- 22 Star Lab – 2:00 p.m. reservations required
- 29 Star Lab – 2:00 p.m. reservations required

Image courtesy of NASA



- 5 Star Lab – 2:00 p.m. reservations required
- 11 High Tech Tour – 3:30 p.m. reservations required
- 12 Star Lab – 2:00 p.m. reservations required
- 13 Star Party & Themed Activity 2:30 p.m. & 4:30 p.m.
- 19 Star Lab – 2:00 p.m. reservations required
- 26 Star Lab – 2:00 p.m. reservations required



- 5 Star Lab – 2:00 p.m. reservations required
- 11 High Tech Tour – 3:30 p.m. reservations required
- 12 Star Lab – 2:00 p.m. reservations required
- 13 Star Party & Themed Activity 2:30 p.m. & 4:30 p.m.
- 19 Star Lab – 2:00 p.m. reservations required
- 26 Star Lab – 2:00 p.m. reservations required



- 2 Star Lab – 2:00 p.m. reservations required
- 8 High Tech Tour – 3:30 p.m. reservations required
- 9 Star Lab – 2:00 p.m. reservations required
- 16 Star Lab – 2:00 p.m. reservations required
- 17 Star Party & Themed Activity 2:30 p.m. & 4:30 p.m.
- 23 Star Lab – 2:00 p.m. reservations required
- 30 Star Lab – 2:00 p.m. reservations required



- 7 Star Lab – 2:00 p.m. reservations required
- 13 High Tech Tour – 3:30 p.m. reservations required
- 14 Star Lab – 2:00 p.m. reservations required
- 15 Star Party & Themed Activity 2:30 p.m. & 4:30 p.m.
- 21 Star Lab – 2:00 p.m. reservations required
- 28 Star Lab – 2:00 p.m. reservations required



- 4 Star Lab – 2:00 p.m. reservations required
- 10 High Tech Tour – 3:30 p.m. reservations required
- 11 Star Lab – 2:00 p.m. reservations required
- 12 Star Party & Themed Activity 2:30 p.m. & 4:30 p.m.
- 18 Star Lab – 2:00 p.m. reservations required
- 24 High Tech Tour – 3:30 p.m. reservations required
- 25 Star Lab – 2:00 p.m. reservations required

Image courtesy of SOHO

Dates subject to change without notice.

# July 2010

Messier Madness!  
Green Bank StarQuest Star Party fun.
















- 2  Star Lab – 2:00 p.m. reservations required
- 8  High Tech Tour – 3:30 p.m. reservations required
- 9  Star Lab – 2:00 p.m. reservations required
- 10  StarQuest Star Party [www.greenbankstarquest.org](http://www.greenbankstarquest.org)
- 16  Star Lab – 2:00 p.m. reservations required
- 22  High Tech Tour – 3:30 p.m. reservations required
- 23  Star Lab – 2:00 p.m. reservations required
- 30  Star Lab – 2:00 p.m. reservations required

Image courtesy of Travis Rector, Monica Ramirez/AURAN/AO/NSF

# August 2010

Meteors: Comet Crumbs! Learn more about comets, meteors and shooting stars as we gear up for the Perseid Shower.

- 6  Star Lab – 2:00 p.m. reservations required
- 7  Star Party & Themed Activity 2:30 p.m. & 4:30 p.m.
- 12  High Tech Tour – 3:30 p.m. reservations required
- 13  Star Lab – 2:00 p.m. reservations required
- 20  Star Lab – 2:00 p.m. reservations required
- 26  High Tech Tour – 3:30 p.m. reservations required
- 27  Star Lab – 2:00 p.m. reservations required

Meteor shower engraving 1988 Adolf Voliny

# September 2010

Final Flight: Celebrate 30 Years of Space Shuttle flights as NASA prepares to retire the fleet.

















- 3  Star Lab – 2:00 p.m. reservations required
- 9  High Tech Tour – 3:30 p.m. reservations required
- 10  Star Lab – 2:00 p.m. reservations required
- 11  Star Party & Themed Activity 2:30 p.m. & 4:30 p.m.
- 17  Star Lab – 2:00 p.m. reservations required
- 23  High Tech Tour – 3:30 p.m. reservations required
- 24  Star Lab – 2:00 p.m. reservations required

Image courtesy of NASA






# October 2010

Celebrate Astronomy Day at the NRAO Open House. Lots of Family Activities!

- 1  Star Lab – 2:00 p.m. reservations required
- 8  Star Lab – 2:00 p.m. reservations required
- 9  Star Party & Themed Activity 2:30 p.m. & 4:30 p.m.
- 14  High Tech Tour – 3:30 p.m. reservations required
- 15  Star Lab – 2:00 p.m. reservations required
- 22  Star Lab – 2:00 p.m. reservations required
- 24  Annual Community Open House
- 28  High Tech Tour – 3:30 p.m. reservations required
- 29  Star Lab – 2:00 p.m. reservations required






# November 2010

Is your telescope gathering dust? Bring it in to our telescope clinic, and we'll have you observing in no time.

- 5  Star Lab – 2:00 p.m. reservations required
- 6  Star Party & Telescope Clinic 2:30 p.m. on
- 12  Star Lab – 2:00 p.m. reservations required
- 18  High Tech Tour – 3:30 p.m. reservations required
- 19  Star Lab – 2:00 p.m. reservations required

# December 2010

Try some "Moony" Activities as we get ready for a Total Lunar Eclipse on December 21.

- 3  Star Lab – 2:00 p.m. reservations required
- 4  Star Party & Themed Activity 2:30 p.m. & 4:30 p.m.
- 9  High Tech Tour – 3:30 p.m. reservations required
- 10  Star Lab – 2:00 p.m. reservations required
- 17  Star Lab – 2:00 p.m. reservations required

Dates subject to change without notice.



## Galaxy Gift Shop

The Galaxy Gift Shop offers a wide range of unique t-shirts and logo apparel & items, an assortment of science & astronomy books, star charts, science kits and educational toys. Celestial themed marbles, jewelry and hand-blown WV glass ornaments are just a few of the custom items guests will find in the gift shop. The Galaxy Gift Shop also features ORION telescopes, accessories and products.

Galaxy Gift Shop 304-456-2151

### Full Moon Sales

25% off select items

Jan. 30, Feb. 28, Mar. 29, Apr. 29, Nov. 21, Dec. 20



## Starlight Cafe

The Starlight Cafe offers deli sandwiches & wraps, salads, hot dogs & burgers, nachos & soft pretzels, soft-serve ice cream treats and an assortment of snack foods.

Motor coach, school & scout groups: take advantage of our group menus & pricing! Pricing applicable to:

- Guarantee of 20 or more people
- Minimum of 2 weeks advance notice
- Box lunches & buffet options offered

For more information contact our cafe manager at 304-456-2361 or [twarder@nrao.edu](mailto:twarder@nrao.edu)

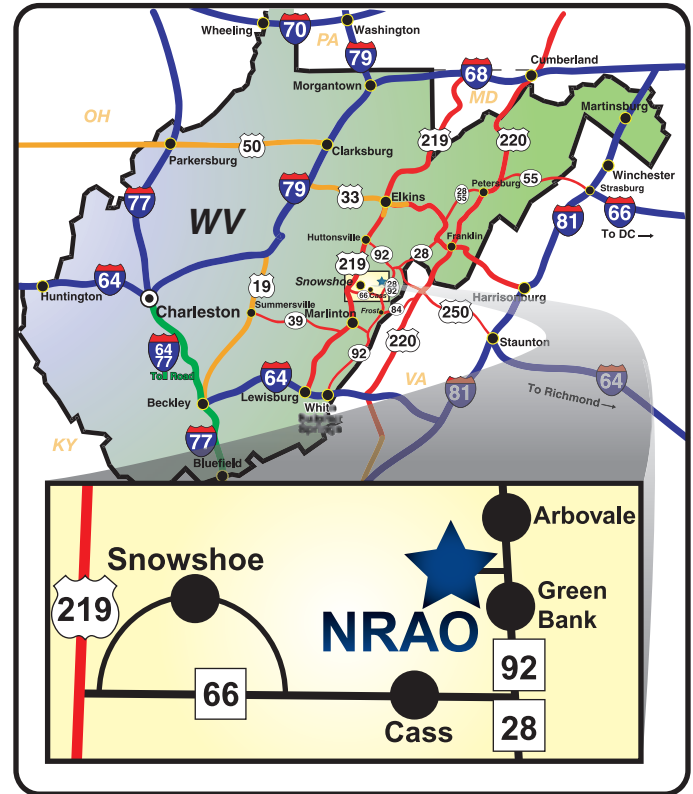
The Starlight Café is open:  
 Winter & Spring Hours 11:00 a.m. – 5:00 p.m. Thurs. – Mon.  
 Summer Hours 11:00 a.m. – 7:00 p.m. Daily  
 Fall Hours 11:00 a.m. – 7:00 p.m. Thurs. – Mon.



## GBT Fast Facts

- The telescope helps us learn about stars, galaxies and other objects in the Universe by collecting the radio waves they emit.
- The telescope is 485ft (148m) tall - taller than the Statue of Liberty and nearly as tall as the Washington Monument.
- It weighs 17 million lbs (7.7 million kg) - as much as 20 fully loaded Boeing 747s.
- Despite its weight, the GBT can be pointed with an accuracy of one arcsecond. That's equivalent to the width of a human hair seen from 66 feet (20m) away.
- The GBT's surface is made up of 2004 metal panels, and is almost 2.3 acres (8000m<sup>2</sup>) the same size of two football fields.
- The telescope works both night and day - the radio waves it collects are not drowned out by the sun.
- The telescope is designed to handle a great range of wave-lengths from 9ft (3m) long down to 1/8th inch (3mm).
- The telescope only receives signals from space, never sends them.

## Getting Here



The National Radio Astronomy Observatory Green Bank is located in Pocahontas County on Route 92/28 about 25 miles north of Marlinton, 53 miles south of Elkins, and 65 miles west of Staunton, VA.

National Radio Astronomy Observatory

PO Box 2

Green Bank, WV 24944

(304) 456-2150 – Tour Center

<http://www.gb.nrao.edu>

[gbt-tours@nrao.edu](mailto:gbt-tours@nrao.edu)



NRAO is a facility of the National Science Foundation operated under cooperative agreement by Associated Universities, Inc.