



PISGAH ASTRONOMICAL RESEARCH INSTITUTE

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Space Day scheduled May 7



PARI's annual Space Day is scheduled for Saturday, May 7, with the PARI campus open to the public from 10:00 a.m. to 5:00 p. m. Visitors can enjoy a variety of events and activities suitable for all ages, including facility tours, a hands-on telescope experience, a planetarium show inside PARI's popular StarLab and much more. It's all free, so if you have never been to PARI, or simply want to come back for a full day of fun, this is your chance! Additional details and directions can be found at www.pari.edu.



PARI announces Homeschool Day

New at PARI this year is a special day set aside for homeschool students. Homeschool Day is scheduled for Friday, May 6, the day before our annual Space Day. Morning and afternoon sessions are planned, and each session will feature classes on astronomy and earth sciences, as well as a visit to the StarLab Planetarium.

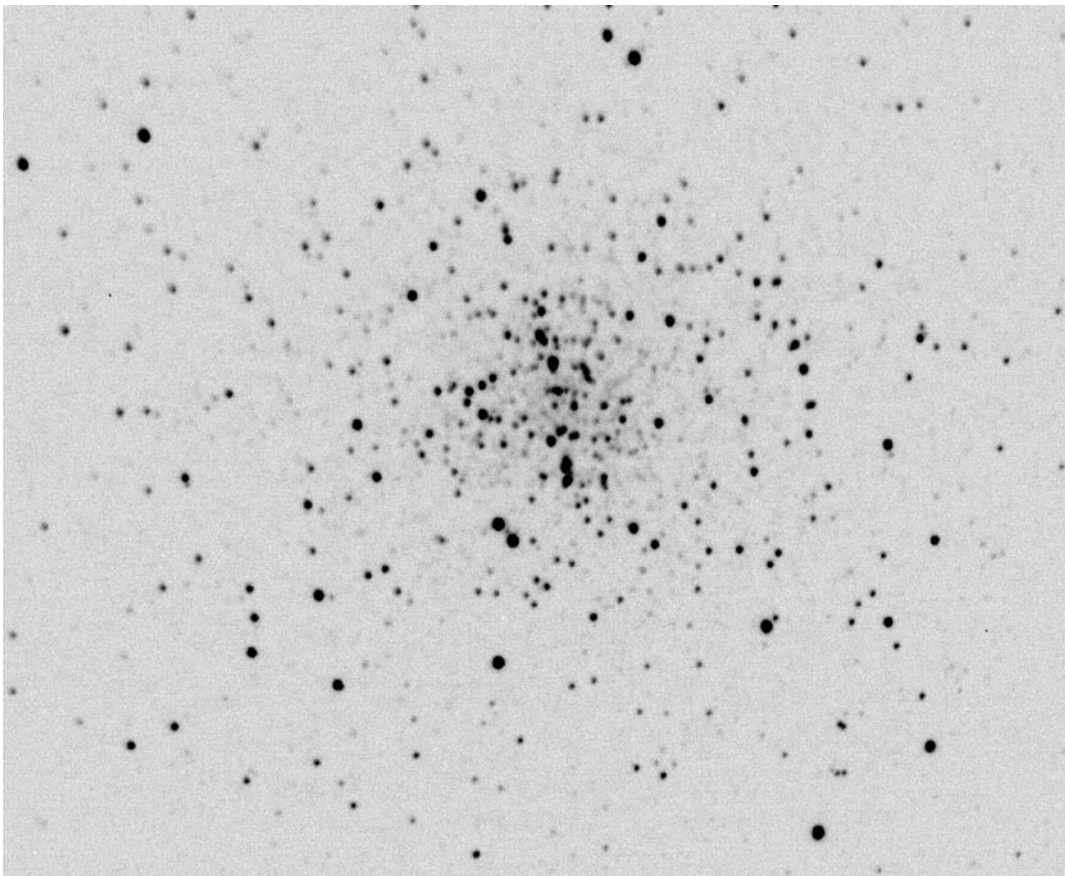
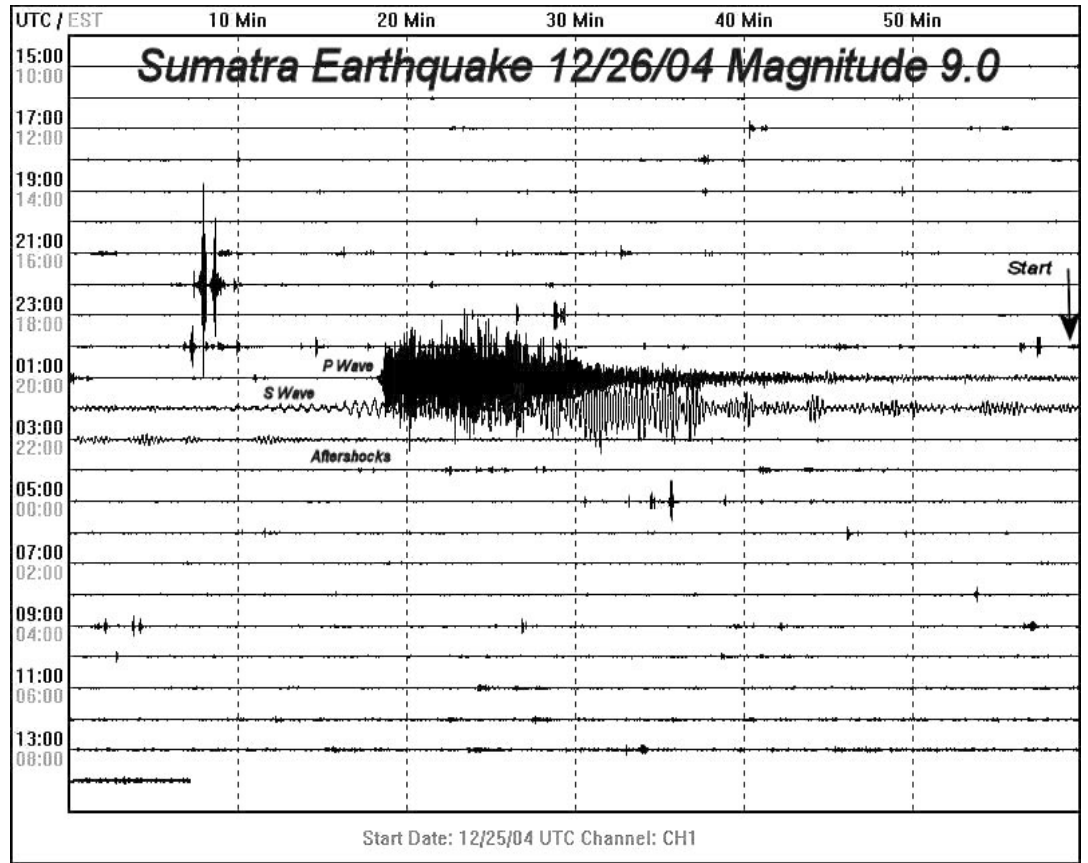
Complete details can be found at www.pari.edu. Advance registration is required, either by telephone (828-862-5554) or email (info@pari.edu).

PARI Calendar

- March 12:** Science House Workshop at Lenoir
- March 17:** Public Evening at PARI
- March 19:** School of Galactic Radio Astronomy Teacher Workshop
- March 30:** PARI Talk at Hendersonville Library
- April 9:** Volunteer Weekend
- April 16:** Science House Workshop at Asheville
- April 23:** School of Galactic Radio Astronomy Teacher Workshop
- May 6:** Homeschool Day at PARI
- May 7:** NASA Space Day at PARI
- May 20:** Presentation at the Atlanta Astronomy Club Meeting
- June 11:** Volunteer Weekend

What We're Looking At

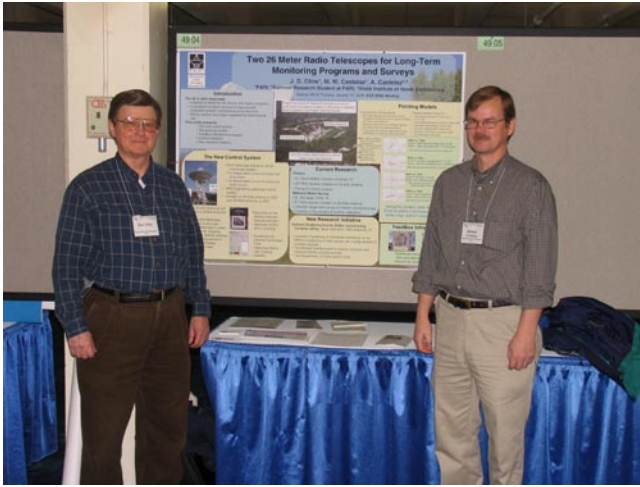
This trace from PARI's seismometer shows the 9.0 magnitude earthquake that caused the devastating Indian Ocean tsunami in December. News that PARI "felt" the earthquake halfway around the world created a ripple of its own, with coverage by local newspapers and television stations. PARI received one report that the story was aired by a Boston TV station. The seismometer is maintained by Technical Director Charles Osborne, who says it's so sensitive it sometimes registers the lawn mowers on the PARI campus.



This photo (in standard negative form) of the globular cluster M4 in Scorpius was taken by PARI astronomer Mel Blake, using the PARI 12 inch South telescope. Globular clusters are among the oldest objects known in the galaxy, with M4 thought to be between 13 and 14 billion years old---more than three times the age of our Sun. The cluster is near the bright star Antares, and lies about two kiloparsecs (7000 light years) away.

PARI Presents at AAS Meeting

Don Cline and Mike Castelaz were among the 2700 professional astronomers who traveled to San Diego for the 205th meeting of the American Astronomical Society. PARI presented six posters, including this one describing the 26m radio telescopes. PARI astronomer Mel Blake also attended, and presented research findings from his study of variable stars in old open clusters.



Precession: Why is the First Point of Aries in Pisces?

astronomer's corner

Dr. Bob Hayward, Astronomer/Educator

How many constellations are there in the zodiac? If you consult the horoscope column in your local paper, the answer will be 12. But, if you look at the path the Sun follows around the sky, the answer is 13. Why the discrepancy?

Due to the revolution of the Earth around the Sun, the Sun appears to move along a great circle called the ecliptic. Also tracing a great circle around the sky is the celestial equator, the extension of the Earth's equator into the sky. Now, the rotational axis of the Earth is tilted at an angle of $23\frac{1}{2}^\circ$ to the plane of the Earth's orbit, i.e., the ecliptic. Therefore, the celestial equator is inclined at that angle to the ecliptic and the two intersect in two points, called the equinoxes, on opposite sides of the sky. The Sun crosses the celestial equator heading north in late March at the so-called spring or vernal equinox. Six months later it crosses the celestial equator heading south at the fall or autumnal equinox. The ancients started the year with the date on which the Sun reached the vernal equinox in March. This occurred in the constellation of Aries the Ram. Thus, the ancients called this very important point the "First Point of Aries."

In 125 BC Hipparchus noticed that this First Point of Aries was moving! It was slipping westward along the ecliptic at a rate that caused the Sun to reach it about 20 minutes before the end of the year. Today we call this motion the precession of the equinoxes. We realize that what is actually happening is that the Earth, in spinning on its rotational axis, is actually wobbling like a top. A little math showed Hipparchus that 20 minutes per year accumulates to a full circle around the sky in about 26,000 years.

So, what is the result of this? In the 2100+ years since the time of Hipparchus the First Point of Aries has moved westward out of the constellation of Aries and into Pisces. Thus, in modern times the Sun is in Pisces on the first day of spring. Precession has also resulted in a change in the position of the ecliptic with respect to the constellations so that in modern days the Sun goes through the constellation of Ophiuchus the doctor in addition to passing through the twelve traditional zodiac constellations. Thus, the Sun is not in the twelve traditional constellations on the dates listed in newspaper horoscopes, and chances are it was not in your "sign" on the date you were born!!

Bob Hayward's column is a regular feature of our newsletter. For additional information, or if you'd like to ask Dr. Bob a question, e-mail askDrBob@pari.edu or, write Dr. Bob at One PARI Dr., Rosman, NC 28772

PARI needs your help!

PARI is a public, not-for-profit foundation. Financially, we are dependent upon contributions and grants for our educational and research programs, and for the many operating expenses associated with maintaining the campus and our facilities.

If you have recently contributed, we thank you for your support. If not, please help support PARI and our mission with a contribution. PARI is a 501 c(3) organization and all donations are tax deductible to the full amount allowed by law.

A financial contribution automatically makes you a member of Friends of PARI. Membership levels and benefits include:

Student Member	\$10.	Member level for full time students. E-mail copy of the PARI Newsletter.
Associate Member	\$50.	Receive Quarterly Issues of the PARI Newsletter.
Member	\$100.	All of the above plus a PARI key chain with light.
Sponsor	\$200.	All of the above plus a PARI coffee mug. Use of the PARI Astronomy Library.
Supporter	\$500.	All of the above plus a PARI hat and a PARI lapel pin.
Mentor	\$1,000.	All of the above plus an invitation to one of the quarterly night astronomy sessions at PARI.
Advisor	\$2,000.	All of the above plus use of the Internet controlled remote optical imaging Space Observatory.
Benefactor	\$5,000.	All of the above plus "Guest Astronomer Program." Spend a day working with the astronomy staff, learning how to operate a radio telescope.

All donors at the level of \$5,000 and above will receive recognition on a plaque at PARI.

Please provide the requested information below and mail it with your contribution to:

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One PARI Drive
Rosman, North Carolina 28772

Name: _____

Address: _____

City State Zip _____

email address _____



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The Pisgah Astronomical Research Institute (PARI) is a not-for-profit public foundation established in 1998. Located in the Pisgah National Forest near Brevard, NC, the PARI campus is a dark sky location for astronomy and was selected in 1962 by NASA as the east coast tracking station for manned space flights. Today, the 200 acre campus houses radio telescopes, optical telescopes, 30 buildings, a full-time staff and all the infrastructure necessary to support astronomy education and research. PARI offers educational programs at all levels, from K-12 through post-graduate research, and is affiliated with the 16-campus University of North Carolina system through PARSEC, a UNC Center hosted at PARI. For more information about PARI and its programs visit:

www.pari.edu

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