

Star Dust

National Capital Astronomers, Inc.

June 2011

Volume 69, Issue 10

<http://capitlastronomers.org>

Next Meeting

When: Sat. June 11, 2011
Time: 7:30 pm
Where: UM Observatory
Speaker: Science Fair Winners

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Directions to Dinner/Meeting

Members and guests are invited to join us for dinner at Three Brothers Pizza, 10961 Baltimore Ave. (Rt.1) just south of Powder Mill Road.

Need a Ride?

Please contact Jay Miller, 240-401-8693, if you need a ride from the metro to dinner or to the meeting at the observatory. Please try to let him know in advance by e-mail at rigel1@starpower.net.

Observing after the Meeting

Following the meeting, members and guests are welcome to tour through the Observatory. Weather-permitting, several of the telescopes will also be set up for viewing.

June 2011:

Science Fair Winners

Joe Morris

An ongoing activity of National Capital Astronomers is the judging of astronomy-related projects in area science fairs, and traditionally our June meetings are the time when we invite the winners to present their projects to the NCA membership.

This year the June pre-meeting dinner, to which the winners and their parents are invited, will be held at Three Brothers Pizza in Beltsville, MD. The address is 10961 Baltimore Avenue (aka Route 1), just south of Powder Mill Road. See map on page 6. We've reserved the back room; everyone is welcome (no additional reservations are required) so please plan to arrive before about 5:30. The winning students who accepted our invitation are:

Julia Cline (Walt Whitman H.S.)
"Earth's Magnetosphere As A Complex Network"

Eric Arai (North Bethesda Middle School)
"How Fast Does Jupiter Rotate?"

Take the Next Step

By Tom Koonce

June, 2011

Lancaster, California

The moderate summer evenings are finally here and the best time of year to observe the sky has arrived. I have written at length in the past about how to get started in amateur astronomy, but this month we'll step it up a few notches with a discussion of what I think a beginner needs to take observing to the next level. I have no business association with any of the companies mentioned in this article, but have extensive experience to back up each of my recommendations below. I'm calling it as I see it. Your actual mileage may vary.

First, get a Telrad for your telescope. This "1X spotting scope" is the most useful accessory you'll get. There are other 1 X finders on the market that you can use, but I think the Telrad holds up the best over time.

Next, you're going to be considering getting eyepiece filters and maybe even a new eyepiece. Here's what I think are the essentials and I list them in priority order.

Continued on Page 2

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Thank you!

Reminder

After the meeting, everyone is invited to join us at Plato's Diner in College Park. Plato's is located at 7150 Baltimore Ave. (US Rt. 1 at Calvert Rd.), just south of the university's campus. What if it's clear and you want to stick around and observe? No problem -- just come over when you're through. This is very informal, and we fully expect people to wander in and out.

Cuts to Owens Science Center

Michael Chesnes

The Owens Science Center in Lanham, MD faces the prospect of staff reductions that seriously limit its ability to provide Science, Technology, Engineering, and Mathematics (STEM) education to K-12 students in Prince George's County.

According to the Prince George's County Public School System FY 2012 Budget Work Session dated May 23, 2011, the Owens staff cuts will be used to keep open the William S. Schmidt Center in Brandywine, MD.

"(the) Schmidt Center is proposed to be restored by partially realigning funds and FTE (3.0) from H.B Owens Center and C & I-Academic Programs (2.0) and adding 2.5 additional FTE." (full-time equivalent positions)

The resulting budget would therefore include for the Schmidt Center -\$694k and 7.50 FTE, and for the Owens Science Center -\$961k and 8.0 FTE. What the public is not being told is that only three of the full time positions are teaching staff.

The Schmidt Center appeared on early versions of budget cuts, and therefore the public had a chance to voice their concerns and support for the Center before the Board at public Board sessions. These drastic cuts to the Owens Science Center were made after the public sessions were over, so neither parents, teachers, nor students were given the opportunity to voice their support of the Owens Science Center.

While the budget situation is severe and very real, it is sad to know that some of the finest programs the County has to offer its students are being cut behind closed doors. The Owens Science Center was once the showpiece of the county. Former First Ladies have visited and observed its programs. Year after year the County has whittled away at the staff of the Center and severely limited transportation to the Center, making regular scheduling an almost insurmountable task. However, the Science Center staff has risen to the occasion and continued to offer excellent hands-on learning environments for students.

Continued from Page 1

- Thousand Oaks solar filter.
- Decent quality eyepieces you've had a chance to use.
- High quality O-III (pronounced "Oh-three") narrow band-pass filter for deep sky.
- "Skylight" filter and diagonal if you have a Schmit-Cassegrain telescope.
- Barlowed laser collimation tool for Newtonian telescope.
- Adjustable red flashlight.
- Polarizing Moon filter.
- Good night sky atlas.
- Portable table.
- Begin working on your Messier Pin.
- Old blanket, carpet, or artificial turf to put beneath your telescope when observing.

This will get you started. I didn't mention other items such as an observing stool to sit on, color filters, a warm jumpsuit, or large camp chair for taking a break. You can add these as you go forward. Advancing in amateur astronomy is not about the equipment, but about honing your observing skills. Each item I've mentioned will either enable or simplify the technical portion of observing so that you can concentrate more on the sky and less on whether or not you have the necessary resources at hand.

Clear Skies, Tom

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The Royal Observatory in Greenwich, England

Photo Credits: Benson J. Simon

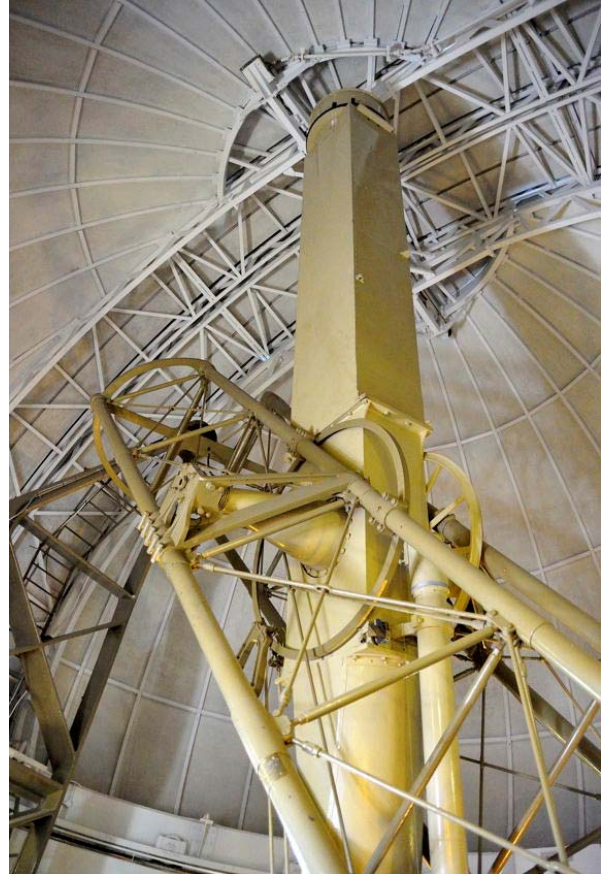


The original Observatory building.



Remnant of Herschel's 40 Foot Telescope completed in 1789.

Continued from Page 3



Above: 28 inch refracting telescope. Left: Mary Ellen Simon at the Prime Meridian marker. Below: The Simons visited Stonehenge while staying in Bath, west of London. Bath has Roman ruins in addition to the nearby Neolithic henges and medieval villages.



Greenwich is easily reachable from central London via an informative guide-narrated Thames boat ride that takes about an hour, or by train in 15-20 minutes. The Simons went by boat and returned by train. There are several other things to see at the Observatory including a planetarium, a maritime museum and a fine art gallery.

NASA News from Frank Reddy

NASA's Swift Finds Most Distant Gamma-ray Burst Yet 05.27.11

On April 29, 2009, a five-second-long burst of gamma rays from the constellation Canes Venatici triggered the Burst Alert Telescope on NASA's Swift satellite. As with most gamma-ray bursts, this one -- now designated GRB 090429B -- heralded the death of a star some 30 times the Sun's mass and the likely birth of a new black hole.

Now, after two years of painstaking analysis, astronomers studying the afterglow of the explosion say they're confident that the blast was the farthest explosion yet identified -- and at a distance of 13.14 billion light-years, a contender for the most distant object now known.

Gamma-ray bursts are the universe's most luminous explosions, emitting more energy in a few seconds than our Sun will during its energy-producing lifetime. Most occur when massive stars run out of nuclear fuel. When such a star runs out of fuel, its core collapses and likely forms a black hole surrounded by a dense hot disk of gas. Somehow, the black hole diverts part of the infalling matter into a pair of high-energy particle jets that tear through the collapsing star.

The jets move so fast -- upwards of 99.9 percent the speed of light -- that collisions within them produce gamma rays. When the jets breach the star's surface, a gamma-ray burst is born. The jet continues on, later striking gas beyond the star to produce afterglows.

For the full story visit:

http://www.nasa.gov/mission_pages/swift/bursts/swift-20110527.html#

Radio Telescopes Capture Best-Ever Snapshot of Black Hole Jets 05.20.11

Centaurus A is a giant elliptical active galaxy 12 million light-years away. At its heart lies a black hole with a mass of 55 million Suns. Now, the TANAMI project has provided the best-ever image of particle jets powered by the black hole, revealing features as small as 15 light-days across. The jets feed vast lobes of radio-emitting gas that reach far beyond the visible galaxy. The study will appear in the June issue of *Astronomy and Astrophysics* and is available online.

For the full story visit:

<http://www.nasa.gov/topics/universe/features/radio-particle-jets.html>

Mid-Atlantic Occultations and Expeditions

David Dunham

Asteroidal Occultations

Date	Day	EDT	Star	Mag.	Asteroid	dmag	s "	dur.	Ap.	Location
May 19	Thu	5:14	2UC25166625	13.8	Crantor	7.5	4 10			Centaur;Americas
May 21	Sat	23:22	2UC25334248	12.4	Sibylla	0.5	11 9			VA,WV,OH;MD,DC?
May 24	Tue	3:10	2UC25584820	12.3	Kathleen	1.7	5 8			NJ,MD,WV;VA,PA?
May 27	Fri	1:43	SAO 207042	9.2	Mendel	5.7	1 4			MD,DC,PA;n&eVA?
May 29	Sun	2:36	SAO 141925	7.0	Eudora	5.9	11 2			cenFL,sMS,nLA
May 30	Mon	2:27	2UC40088506	11.2	Ganymed	0.5	1.5 8			NJ,eNY;DE,seMD?
Jun 3	Fri	4:25	PPM 719647	10.5	Sakuntala	2.6	4 6			NJ,DE,eMD,seVA
Jun 10	Fri	4:28	2UC21644474	13.3	Jenny	1.2	7 10			NJ,MD,DC;VA,PA?

Lunar Grazing Occultations (*, Dunham plans no expedition)

Date	Day	EDT	Star	Mag.	% alt	CA	Location
Jun 3	Fri	21:20	SAO 78529	8.0	5+ 8	8N	*Jacksonville, NC Sun alt -11
Jun 9	Thu	0:00	SAO 138004	7.5	51+ 12	3N	*Lewsbg&Bethlehem,PA;Edison,NJ

Total Lunar Occultations

DATE	Day	EDT	Ph	Star	Mag.	% alt	CA	Sp.	Notes
May 16	Mon	0:56	D	ZC 2039	5.5	98+ 31	40N	A0	Term. dist. 19";CTgraze
May 16	Mon	1:44	D	ZC 2045	6.4	98+ 27	79S	K0	
May 16	Mon	2:36	D	CS Vir	5.9	98+ 21	75S	Ap	ZC 2051
May 18	Wed	23:14	R	39 Oph	5.2	96- 11	47S	K	Az134,AA228,ZC2490,dbl
May 18	Wed	23:15	R	SAO 185237	6.7	96- 11	48S	G8	39OphCompanion,sep. 10"
May 18	Wed	23:24	R	ZC 2491	6.6	96- 12	83N	G3	Azimuth 135, AA 278
May 19	Thu	3:18	R	ZC 2510	6.2	95- 27	71S	K0	AA 251
May 19	Thu	4:03	R	44 Oph	4.2	95- 25	79S	A3	AA260, ZC2513; double?
May 20	Fri	1:01	R	ZC 2661	7.3	90- 18	47N	B8	
May 20	Fri	4:46	R	ZC 2675	7.0	89- 27	63S	G8	Sun-11, close double?
May 21	Sat	3:13	R	ZC 2829	6.7	82- 27	80S	K2	
May 23	Mon	5:07	R	ZC 3088	8.0	64- 36	90N	K1	Sun Alt. -8 deg.
May 24	Tue	1:54	R	ZC 3199	6.5	55- 6	79S	K0	Azimuth 107 deg.
May 25	Wed	2:59	R	Situla	5.0	45- 13	40S	K2	Az107,ZC3320,dbl?,kpAqr
May 25	Wed	4:24	R	SAO 146222	8.0	44- 29	40N	K0	
May 25	Wed	5:41	R	ZC 3326	6.4	44- 40	85N	F6	Sun-2,mg2 7.8,.1",PA122
May 26	Thu	6:47	R	kappa Psc	5.0	34- 47	33S	A0	Sun+10,ZC3453,closeDbl?
May 29	Sun	4:34	R	SAO 92548	8.1	11- 11	50S	A3	Azimuth 81 deg.
May 29	Sun	5:15	R	104 Psc	6.7	11- 19	71N	K0	Sun -6, ZC 244
Jun 3	Fri	21:17	D	ZC 1010	7.9	5+ 9	27S	F2	Sun -9, Azimuth 290 deg
Jun 4	Sat	21:35	D	ZC 1142	8.0	11+ 14	73S	F5	Sun-11,Az283,mg2 12 4"
Jun 7	Tue	20:37	D	SAO 118150	7.3	38+ 43	79N	K0	Sun -2, close double?
Jun 7	Tue	22:23	D	19 Sex	5.8	38+ 25	15S	K0	ZC1495
Jun 8	Wed	23:53	D	SAO 138004	7.5	50+ 14	22N	M	Az. 257, close double?
Jun 9	Thu	0:20	D	66 Leonis	6.8	51+ 8	65S	A2	Az. 261, ZC1620
Jun 9	Thu	22:51	D	ZC 1729	8.1	62+ 29	55S	F2	
Jun 11	Sat	0:51	D	SAO 157613	7.4	73+ 14	11N	K5	Az. 242,mg2 9,sep 0.1"
Jun 11	Sat	0:53	D	ZC 1858	6.3	73+ 14	45N	K5	Azimuth 242 deg.
Jun 12	Sun	1:21	D	ZC 1993	6.6	83+ 14	57S	K3	Az. 234, close double?

Explanations & more information are at <http://iota.jhuapl.edu/exped.htm>.

David Dunham, dunham@starpower.net

Phones: home 301-220-0415; cell 301-526-5590

Timing equipment and even telescopes can be loaned for most expeditions that we actually undertake; we are always shortest of observers who can fit these events into their schedules, so we hope that you might be able to.

Information on timing occultations is at: <http://iota.jhuapl.edu/timng920.htm>.

Good luck with your observations.

On top of Page 6: Shape model of asteroid (17) Thetis from April 22, 2011 occultation. Model by Josef Durech from inversion of light curve observations.

Event points fitted to shape model by Brad Timerson using Occult 4 software. 1 Steve Conard, Gamber, MD; 3 Andy Scheck, Scaggsville, MD; 4 D. Dunham remote, Cheltenham, MD; 5 D. Dunham remote, Hawthorne, MD; 6 David Dunham, Port Conway, VA

Nominating Committee Report

By Jeff Norman, Chair

This is a reminder to all NCA members that we will elect officers for next year (July 2011 to June 2012) at NCA's June 11, 2011 meeting. The Nominating Committee (Jay Miller, Harold Williams and Jeff Norman) is recommending the following slate of officers; but any member may make additional nominations from the floor.

- President - Joseph Morris
- Vice-President - John Hornstein
- Secretary - Gary Dehne
- Treasurer - Michael Brabanski
- Asst/Sec/Treas - Jeff Norman
- Trustee - Wayne Warren

Maps and Directions for Three Brothers Restaurant in Beltsville, MD

Three Brothers is located at 10961 Baltimore Avenue (Route 1), just south of its intersection with Powder Mill road (Route 201).



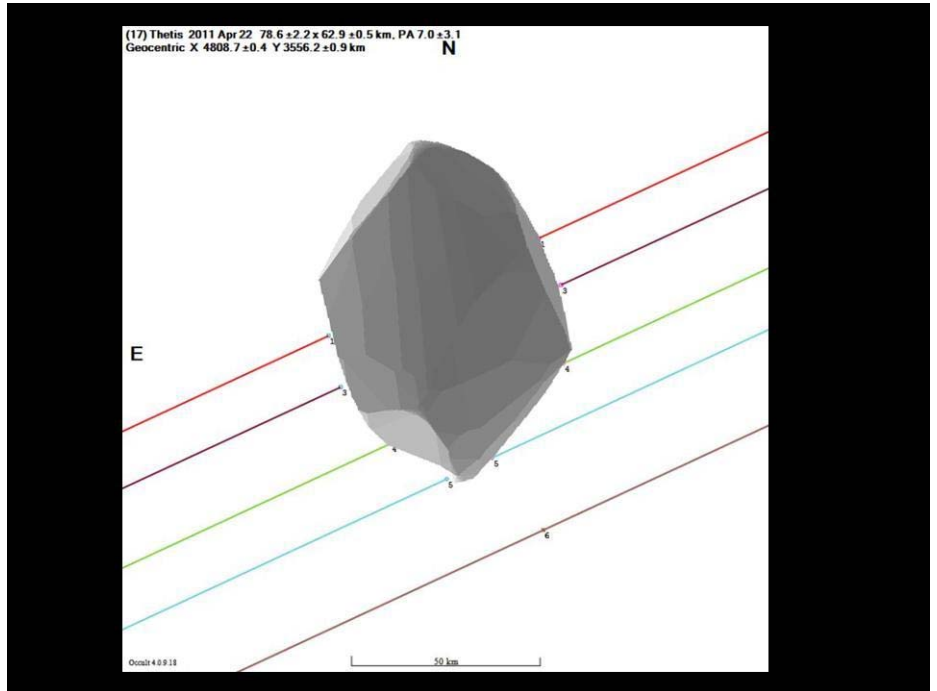
NASA Spacecraft's Data Reveal Magma Ocean Under Jupiter Moon

Based on NASA News May 12, 2011

New data analysis from NASA's Galileo spacecraft reveals a subsurface ocean of molten or partially molten magma beneath the surface of Jupiter's volcanic moon Io.

This is the first direct confirmation of such a magma layer at Io and explains why the moon is the most volcanic object known in the Solar System. The research was in the journal Science.

Scientists finally understand where Io's magma is coming from and can explain some of the mysterious signatures in Galileo's magnetic field. Io was behaving in Jupiter's rotating magnetic field as would be expected from molten or partially molten rocks about 20 to 30 miles beneath the surface.



Science News

Thank you Nancy Grace Roman for finding these articles.

Asteroid Composition

Based on Science 15 April 2011: Vol. 332 no. 6027 p. 302

A crippled Hayabusa spacecraft barely made it back to Earth last June, and it returned only a wisp of a sample from Itokawa, the asteroid it visited in 2005. But at this year's Lunar and Planetary Science Conference, Japanese researchers announced that the little spacecraft that could has scored a solid scientific success. Detailed analyses of the sample the first ever returned from an asteroid have confirmed the oft-contentious claim that the most common type of meteorite falls to Earth from a class of asteroids long cloaked by a mysterious discoloration.

The particles collected by Hayabusa's malfunctioning sampling mechanism were mostly smaller than 10 micrometers. There were problems getting the particles out but in the end, turning the canister upside down and rapping it 20 times with a screwdriver did the trick. All told, there were about 1500 particles from Itokawa smaller than 100 micrometers. Hayabusa analyses now clearly show that Itokawa is a space-weathered ordinary chondrite. That brings a closure to the long-standing asteroid conundrum.

Pluto's Expanding Atmosphere

Based on ScienceNOW by Sid Perkins 19 April 2011

Pluto's atmosphere recently expanded dramatically. Data collected around the turn of the century suggested that Pluto's cold, diffuse atmosphere extended no more than 135 kilometers above the planet's surface. Now, the atmosphere reaches heights of more than 3000 kilometers, a distance almost one-quarter of the way to Charon, Pluto's largest moon. The findings may be evidence of seasonal changes in climate linked to Pluto's most recent close approach to the Sun.

Pluto's tenuous atmosphere was discovered in 1988 when the dwarf planet passed between Earth and a distant star, blocking some of the star's light. Although telescopic observations at various wavelengths since the early 1990s have since identified several substances in Pluto's surface, ices, including nitrogen, methane, and carbon monoxide, only methane had been detected previously in its atmosphere. Because carbon monoxide probably could have been observed by instruments in previous studies, the researchers suggest its new-found presence likely marks a new stage in the season-by-season evolution of Pluto's atmosphere. Scientists expect that by far the largest constituent is nitrogen, a gas that's hard to detect due to its subdued emissions characteristics at many wavelengths.

Arlington Planetarium Upcoming Events

Reserve your seats for events at the planetarium by emailing us at contact@saveplanetarium.org up to 24 hours before the event. Walk-ins are accommodated on a first-come-first-served basis.

June 10 (Friday) – Observing at Kenmore Middle School 6 – 9 p.m. Volunteers needed.

June 15 (Wednesday) – **Benefit Concert & Lecture**, W-L Auditorium (1301 N Stafford St, Arlington). 6:30 pm (doors open 6 pm). All ages. Recommended donations \$15, children under 12 free.

Performance by **The Spanish Chorus**, a regionally acclaimed Arlington County group of elementary students under the direction of Cora Lee Khambatta.

Lecture by **Dr. John Grunsfeld**, Deputy Director of Space Telescope Science Institute, and former NASA astronaut, "**Saving the Hubble Telescope**." Dr. Grunsfeld is a veteran of five space flights, has participated in two Hubble servicing missions, and has logged 58 days in space.

June 18 (Saturday) – **John Glenn's Flashback concert** at the planetarium. Save the date. Details to follow.

Calendar of Events

NCA Mirror- and Telescope-making Classes: Tuesdays June 7, 14, 21, 28 and Fridays, June 3, 10, 17, 24, 6:30 to 9:30 pm at the Chevy Chase Community Center, at the northeast corner of the intersection of McKinley Street and Connecticut Avenue, N.W. Contact instructor Guy Brandenburg at 202-635-1860 or email him at gbrandenburg@yahoo.com. In case there is snow, call 202-282-2204 to see if the CCCC is open.

Open house talks and observing at the University of Maryland Observatory in College Park on the 5th and 20th of every month at 8:00 pm (Nov-Apr) or 9:00 pm (May-Oct). There is telescope viewing afterward if the sky is clear.

Dinner: Saturday, June 11 at 5:30 pm, preceding the meeting, at the **Three Brothers Italian Restaurant** (301) 595-8888. See map and directions on left hand column of page 6. Note that the dinner is in a different place than its usual location, but we will have the meeting at the Observatory as usual.

Upcoming NCA Meetings at the University of Maryland Observatory:
June 11, 2011 **Science Fair Winners**

- Julia Cline (Walt Whitman H.S.)
"Earth's Magnetosphere As A Complex Network"
- Eric Arai (North Bethesda Middle School)
"How Fast Does Jupiter Rotate?"

*****Next NCA meeting is on September 10*****

National Capital Astronomers Membership Form

Name: _____ Date: ___/___/___

Address: _____ ZIP Code: _____

Home Phone: ___-___-___ E-mail: _____ Age: _____

Present or Former Occupation (Or, If Student, Field of Study): _____

Academic Degrees: _____ Field(s) of Specialization: _____

Employer or Educational Institution: _____

Student Membership: \$ 5

Standard Individual or Family Membership: \$10

Optional additional contribution to NCA: \$__

Total Payment (circle applicable membership category above): \$__

Members receive Stardust, the monthly newsletter announcing NCA activities, by e-mail. If you would like to receive a paper copy of Stardust via regular mail, please check here: _____

Please mail this form with check payable to National Capital Astronomers to:
Michael L. Brabanski, NCA Treasurer; 10610 Bucknell Drive; Silver Spring, MD 20902

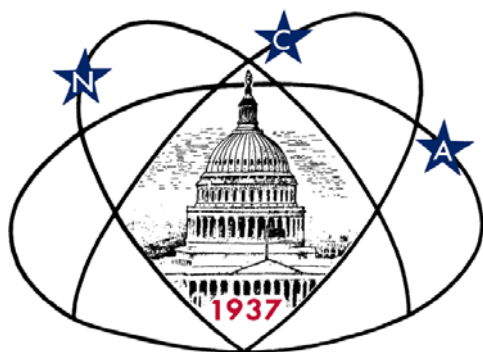
National Capital Astronomers, Inc.

If undeliverable, return to

NCA c/o Michael L. Brabanski
10610 Bucknell Dr.
Silver Spring, MD 20902-4254

First Class

Dated Material



Next NCA Mtg:

June 11

7:30 pm

@ UM Obs

Science Fair

Winners!

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