

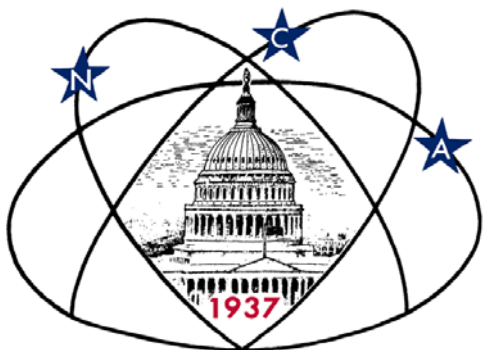
Star Dust

National Capital Astronomers, Inc.

September 2009

Volume 68, Issue 1

<http://capitlastronomers.org>



Next Meeting

When: Sat. Sep. 12, 2009
Time: 7:30 pm
Where: UM Observatory
Speaker: John Chambers, DTM

Table of Contents

Preview of Sep. 2009 Talk.....	1
President's Message.....	1
Exploring the Sky Schedule.....	3
Treasurer's Report.....	3
Observing Pluto.....	4
Occultations.....	5
Science News.....	6
Speaker Reviews.....	6
Coffee and Dessert.....	7
Calendar.....	7

Directions to Dinner/Meeting

Members and guests are invited to join us for dinner at the Garden Restaurant located in the UMUC Inn & Conference Center, 3501 University Blvd E. The meeting is held at the UM Astronomy Observatory on Metzert Rd about halfway between Adelphi Rd and University Blvd.

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.

September 2009: Dr. John Chambers Department of Terrestrial Magnetism Carnegie Institution of Washington How Jupiter and Saturn Influenced the Development of the Solar System

Abstract: Jupiter and Saturn are the most massive planets in the Solar System and the influence of their gravity is felt throughout the planetary system. This was particularly true during the formation and early history of the Solar System. The giant planets are mostly composed of hydrogen and helium, so they must have formed at an early stage in the Solar System when the Sun was still encased in a gas-rich protoplanetary disk. The terrestrial planets, the asteroid belt and the Kuiper belt all probably formed somewhat later than this, so their early history was shaped by gravitational perturbations from Jupiter and Saturn. The number of terrestrial planets, their masses and orbits, and their chemical compositions were all affected by the giant planets. The influence of Jupiter and Saturn was even more profound in the asteroid belt and Kuiper belt, where perturbations from the giant planets prevented planets with stable orbits from forming. Even after the Solar System was fully formed, Jupiter and Saturn continued to shape events elsewhere. These planets played a large role in determining the bombardment histories of the other planets, especially during intense cratering episodes such as the Late Heavy Bombardment.

Biography: John Chambers is a faculty member at the Department of Terrestrial Magnetism at the Carnegie Institution for Science in Washington DC. His research interests include the formation of planets, the origin and evolution of the Solar System, orbital dynamics, and the factors that influence planetary habitability. Previously, he has worked at NASA's Ames Research Center in California, Armagh Observatory in Northern Ireland, and the Center for Astrophysics in Cambridge, Massachusetts. He received his PhD in physics from Manchester University in the UK in 1995.

Joe Morris: President

j.c.morris@verizon.net

The Business Side of National Capital Astronomers

Yes, National Capital Astronomers is a business – a not-for-profit to be sure (see the Treasurer's report elsewhere in this issue of Star Dust) – but like any organization it has chores that need to be taken care of so that it can serve its customers (excuse me, "members"). This article provides a brief summary of the August meeting of the Board of Trustees.

Before getting into the business please allow me to introduce myself.

Continued on Page 2

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.

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Thank you!

Continued from Page 1

You honored me by electing me to the post of NCA president in June, but most of you probably know me as the balding guy who announces the Exploring the Sky outreach sessions, exhorting those at the meeting to help with both telescopes and questions from the public.

For those of you who aren't familiar with my background, I'll note that I have no professional links to either astronomy or spaceflight; my day job is as a Principal Engineer for the MITRE Corporation where I'm the design architect for our worldwide desktop IT facilities, with additional responsibilities for information security and digital forensics investigations. My degrees are in Engineering Physics and Electrical Engineering; besides astronomy I've also been active in photography (both wet and digital).

That's enough about me; now back to the board meeting.

Two topics occupied the bulk of the meeting: what (if anything) we should do to work with other astronomy clubs in the Washington area, and how to increase the participation by NCA members in our activities.

There was agreement that NCA provides a unique service to the public that should be not be compromised by any changes in our operation. Within that framework nobody saw any need to consider merging with other area clubs or having a single dues assessment with them, but some level of joint activities (even something as basic as sharing email distribution lists) will be investigated.

The question of how to increase member participation grew out of the discussion of what changes should be made in NCA. For the past several years we've been irregularly asking members about what activities they would be willing to participate in (including a questionnaire sent out with the annual dues notices) but we've not been following up with the people who indicated a willingness to contribute their time and energy. We will try to do a better job of making use of the services members are offering (and will look at improving the questionnaire and maybe putting it online).

Other items we discussed:

- Although there have been some complaints about the service we'll continue for now to hold the pre-meeting dinner at the Garden Restaurant.
- We discussed the telescopes owned by NCA and how we should best make use of them. No decisions were reached, although some ideas are being investigated such as placing one at the Hopewell Observatory.
- In discussions surrounding the Treasurer's report we discussed the possibility of online payment of NCA dues. We're looking into the idea but given the low dues level (\$10/year) the costs and risks of providing online payments don't look like it's financially practical.

And a "thank you" to Jeff Norman for providing the meeting room and the veggie snacks.

2009-2010 Officers

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Come See the Stars!

Exploring the Sky

2009 Schedule

<u>Date</u>	<u>Time</u>	<i>Things of interest</i>
9/26	8:00 PM	Rock Creek Park day; Pleiades visible
10/17	7:30 PM	Orionid meteors; Andromeda overhead
11/07	7:00 PM	Taurus visible; winter constellations appear

Exploring the Sky is an informal program that for over sixty years has offered monthly opportunities for anyone in the Washington area to see the stars and planets through telescopes from a location within the District of Columbia.

Sessions are held in Rock Creek Park once each month on a Saturday night from April through November, starting shortly after sunset. We meet in the field just south of the intersection of Military and Glover Roads NW, near the Nature Center. A parking lot is located next to the field.

Beginners (including children) and experienced stargazers are all welcome—and it's free!

Questions? Call the Nature Center at (202) 895-6070 or check the Internet sites:

www.nps.gov/rocr/planyourvisit/expsky.htm
www.capitalastronomers.org

A Presentation of the National Park Service and National Capital Astronomers

NCA Treasurer's Report

1 JULY 2008 - 30 JUNE 2009

Michael Brabanski

INCOME		EXPENSES	
Dues	1460.00	Star Dust	816.43
Gifts	978.00	Astronomical League	740.00
Star Dust	250.00	Liability Insurance	320.00
Interest	80.94	Speaker's Dinners	590.39
Sky&Telescope	396.00	Administration	107.24
		IDA	100.00
		Sky & Telescope	461.30
	-----		-----
TOTAL INCOME	3164.94	TOTAL EXPENSES	3135.36
BALANCE - 1 July 2008	10,189.60		
NET CHANGE	+29.58		
BALANCE - 30 June 2009	10,219.18		

This month's theme of the International Year of Astronomy is "Planets and Moons"

Observe Pluto This Year!

September, 2009

By Tom Koonce

Antelope Valley Astronomy Club
Lancaster, California

How many planets have you observed? How many minor planets and dwarf planets? Even though this month's IYA theme is "Planets and Moons" our new Dwarf Planet, Pluto, offers an interesting challenge. Let's not debate the terms "Planet" or "Dwarf Planet", but instead ask if you have ever observed faint Pluto? It's a difficult object to see and to verify.

Pluto can be observed through an 8" telescope, but in my opinion it is HARD to do for an intermediate-level observer. In Greek mythology, Pluto was named after Hades, the God of the underworld, and you'll think about sending this challenge to the same location, but stick with it because spotting Pluto on your own for the first time is an extremely rewarding experience.

You need exceptionally dark skies, a decent telescope and a lot of patience! There is an equation to help you work out how far down the magnitude scale you can get with a telescope (Remember big magnitudes = fainter objects): There is an equation to help you work out how far down the magnitude scale you can get with a telescope (Remember big magnitudes = fainter objects):

Telescope Limiting Magnitude = (Visual Limiting Magnitude) – (5*log d) + (5*log D)

where d is the aperture of the human eye in meters and D is the aperture of the telescope in meters. So to give some examples, let's consider a normal sky where the visual limit is around Magnitude 4.5 and using a 3-inch (76 mm) refractor telescope. We'll use 6 mm as an example aperture of the dark-adapted human eye (young eyes can get to 7 mm):

Telescope Limiting Magnitude = 4.5 – (5*log(0.006)) + (5*log(0.076)) = 10.0

So with a small refractor you can theoretically see down to a limit of about Magnitude 10.0 under these conditions. Pluto however is at Magnitude 13.8 so this is well out of the range of such a small telescope. Under very good skies with a limiting Magnitude of 7.0 and using a telescope of 10 inches (254 mm) aperture, the limiting magnitude becomes.

Telescope Limiting Magnitude = 7.0 – (5*log(0.006)) + (5*log(0.254)) = 15.1

This puts Pluto easily into "realistically observable" status. Why not set the goal of observing all the planets, and Pluto – just for fun?

Depending upon the type of telescope you have and if you have astrophotography skill, you may choose to image Pluto instead of working on the drawing recommended here. Either way you'll have to know where to look. It's recommended that you determine (and memorize) the field of view that you will use during your observation. You can utilize the "12DString FOV Calculator" online here: (<http://www.12dstring.me.uk/fov.htm>) to help figure out the field of view you will see in the eyepiece. You can use a Go-To scope or you can star-hop to the location of Pluto. Either way you must use your telescopes' clock drive to keep the field around the suspected position of Pluto and carefully draw the field of stars. It is critical to spend a lot of time making this drawing because you'll use it over the next two nights to determine which of the faint dots of light is moving and which are static. Fixed = background stars... moving = Pluto!

Take the Pluto Observing challenge! Try to observe all of the planets and at least one dwarf planet within the next twelve months! Maybe you'll be able to see or image Charon, Pluto's moon!

Mid-Atlantic Occultations and Expeditions

Dr. David Dunham

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

David Dunham, dunham@starpower.net phone 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 in their schedule, 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.

Pleiades Occultation Aug. 14

Michael Chesnes

When the crescent Moon occulted the Pleiades last month, the position of the Moon relative to background stars appeared slightly different for observers according to their location on the Earth. Several members of the bright star cluster appeared to graze along the limb of the Moon, as seen from swaths of land in North America only about a mile wide.

Taygeta, one of the Pleiades, had a graze path over parts of Virginia, but since the weather forecast over the path was not promising, David Dunham travelled to Illinois to observe a graze of Maia, another member of the cluster.

Right: A chart showing the position of Maia on August 14 made by Scotty Degenhardt using Guide 8, Project Pluto. For more information see: http://scottysmightymini.com/tools/Ho_w_to_make_Guide8_prepoints.htm.

http://www.projectpluto.com/extras.htm#occ2007_08.

Asteroidal Occultations

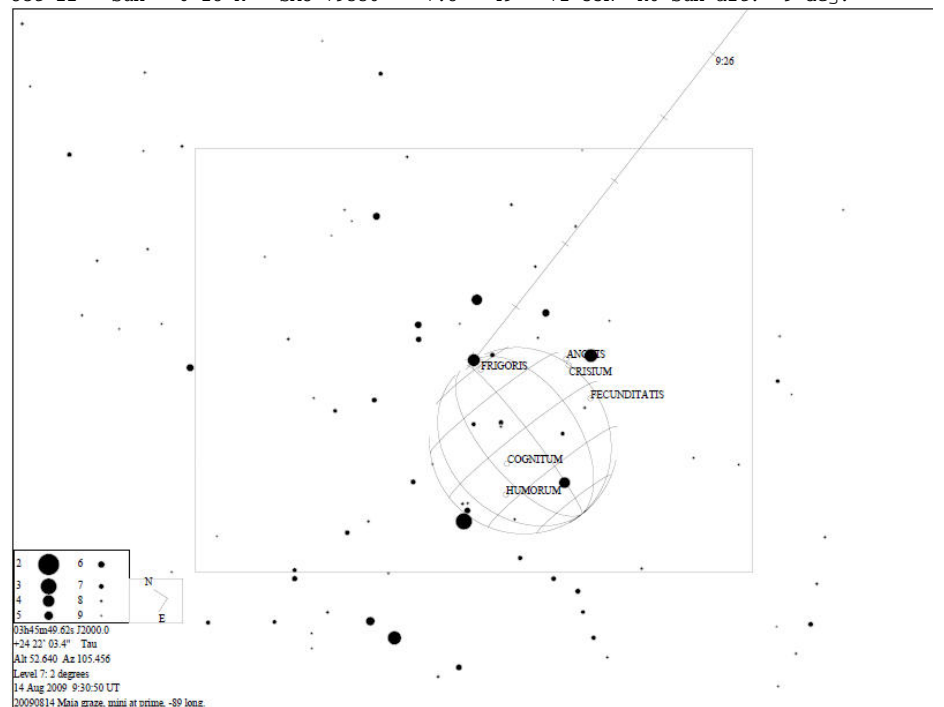
Date	Day	EDT	Star	Mag.	Asteroid	dmag	s "	Location
Sep 9	Wed	1:48	SAO 128871	9.2	Hamburga	4.4	8 4	sNJ,DE,eMD,DC,VA
Sep 9	Wed	20:16	TYC58130114	11.2	1999 RE215	11.9	6 8	TNO,Africa;USA?
Sep 17	Thu	22:44	TYC68582634	11.3	Maria	3.1	4 7	wVA,seWV,wMD,ePA
Sep 18	Fri	20:03	PPM 136796	9.7	1999 SN3	6.4	1 4	MD; nVA,DE,PA?
Sep 20	Sun	5:45	14 Ceti 5.9	1999	WV3	10.4	.6 1	LI,nNJ,PA,OH;MD?
Sep 20	Sun	6:00	2UC41146100	11.8	2004 TX357	9.0	9 8	TNO Arctic;USA?
Sep 20	Sun	20:17	SAO 128004	9.2	Abashiri	6.2	1 4	seVA,n&wNC,nGA
Sep 23	Wed	4:53	TYC00430319	11.9	Irenaea	3.6	4 7	nNJ,sePA,wMD,WV
Sep 28	Mon	20:17	2UC23485820	12.5C	Arachne	1.2	7 8	WV,MD,PA,NJ;VA?
Sep 28	Mon	22:53	TYC00110439	10.3	Somov	5.4	1 5	NJ,sePA,MD,nVA
Oct 6	Tue	21:04	2UC33483517	11.6C	Ekard	0.4	8 9	PA,NJ;MD,DE?
Oct 9	Fri	6:30	2UC41650964	13.1	2002 TX300	6.4	32 9	TNO Arctic;USA?
Oct 10	Sat	21:32	2UC28838190	11.8C	Cybele	0.3	33 9	NY,PA,OH;MD,VA?

Lunar Grazing Occultations (*, Dunham plans no expedition)

Date	Day	EDT	Star	Mag.	% alt	CA	Location
Sep 15	Tue	5:03	SAO 97955	8.1	15- 22	2S	Sterling,VA; Rockv.&Laurel,MD

Total Lunar Occultations

DATE	Day	EDT	Ph	Star	Mag.	% alt	CA	Sp.	Notes
Sep 13	Sun	5:32	R	SAO 78521	7.8	35-	53 57N	K2	
Sep 13	Sun	5:36	R	SAO 78522	8.4	35-	54 60S	K5	
Sep 13	Sun	6:56	R	ZC 1015	6.5	34-	68 64S	A3	Sun alt. +1 deg.
Sep 14	Mon	2:52	R	SAO 79465	8.3	25-	11 38N	G5	Az. 70
Sep 15	Tue	3:05	R	theta Cnc	5.3	16-	1 31N	K5	Az.67,ZC1275,close dbl?
Sep 24	Thu	22:12	D	ZC 2468	6.8	39+	2 40S	G8	Az.232, close double
Sep 25	Fri	20:27	D	ZC 2605	7.3	48+	21 30N	A0	
Sep 26	Sat	19:56	D	SAO 187465	7.4	57+	26 71S	G0	
Sep 26	Sat	21:05	D	ZC 2756	7.5	58+	24 17N	K0	
Sep 26	Sat	21:40	D	ZC 2761	6.6	58+	21 64S	B8	maybe close double
Sep 28	Mon	23:41	D	Loo Sieu	5.2	76+	24 66S	M1	ZC3017=upsilon Cap
Sep 30	Wed	0:16	D	ZC 3142	7.1	84+	29 73S	B9	maybe close double
Oct 1	Thu	3:18	D	Ancha	4.2	91+	11 77N	G8	Az.250,ZC3269=thetaAqr
Oct 1	Thu	23:42	D	ZC 3366	6.6	95+	48 70N	A0	close double
Oct 6	Tue	20:54	R	epsilonAri	4.7	91-	11 6N	A2	Az72,ZC440,dbl,TermDs2"
Oct 6	Tue	23:26	R	SAO 75715	7.3	90-	40 74S	K0	May be close double
Oct 7	Wed	3:42	R	SAO 75777	7.6	89-	72 72S	B9	
Oct 7	Wed	23:49	R	36 Tauri	5.5	83-	35 34S	G0	ZC 598, close double
Oct 10	Sat	1:47	R	SAO 78081	7.8	62-	35 76S	G5	May be close double
Oct 10	Sat	3:15	R	SAO 78132	8.2	62-	52 54N	K2	
Oct 10	Sat	3:18	R	ZC 949	7.3	62-	52 23N	K5	May be close double
Oct 10	Sat	6:13	R	SAO 78231	7.4	61-	76 83N	K2	mg2 9.9,sep. 21",PA 243
Oct 10	Sat	6:21	R	ZC 966	7.1	61-	76 36N	B9	Sun-11,mg2 9,57",PA 265
Oct 11	Sun	6:28	R	SAO 79330	7.8	49-	72 55N	K0	Sun alt. -9 deg.



Would You Like to Introduce a Speaker or Review a Talk?

Introducing a speaker is fun, and reviewing a talk is a great way to master a topic that interests you.

If you would like to do either, please send a message to me at jshgwave@yahoo.com.

Opportunities for introducing speakers still exist for:

October 10: Robert Olling (U Md)
- *Proper Motions Within Andromeda*

January 9: Peter Teuben (U. Md.)
- *The Dynamics of Barred Galaxies*

February 13: Scott Sheppard (DTM) -
Satellites of the Giant Planets

Opportunities for writing a review still exist for the talks listed above, and also for:

September 12: John Chambers (DTM)
- *How Jupiter and Saturn influenced the development of the Solar System*

November 14: Alice Harding (GSFC)
- *A Gamma-ray Pulsar*

April 10: David Thompson (GSFC)
- *Results from the Fermi Gamma-ray Space Telescope*

John Hornstein

Science News

Thank you Nancy Grace Roman for finding these articles.

A Very Cool Brown Dwarf

Based on Recent Science Highlights
Jean Rene Roy & R. Scott Fishe
Gemini Focus, June 2009

The dwarf, Wolf 940b is a companion to a red dwarf, about 40 light years from earth. The separation of the pair is about 440 AU and the orbital period 18,000 years. Wolf 940b probably has a mass 20-30 times that of Jupiter. With a spectral type of T8.5, its surface temperature is only 570K (1500° F). Although very faint in the visible, because of its low temperature it is comparatively bright in the infrared and thus it was discovered in a large infrared survey.

Massive stars tend to be binary

Brian D. Mason and William I. Hartkopf give a table of binary frequency in the NOAO/SSO Newsletter for June 2009. In this table, their observations with speckle interferometry have begun to fill the gap between spectroscopic and visual binaries. The percentage of stars with companions in various groups of O stars are as follows: Clusters and Associations: 75%; Field stars: 59%, and Runaways: 43%. It has been known that M dwarfs have few companions. Hence, multiplicity frequency appears to be a function of mass.

Aircraft Collects Dust Older Than The Solar System

Discovery News 2009/05/01

On 5/1, Klotz) reported, "An innovative plan to retrieve comet particles from Earth's stratosphere has hit pay dirt, with the discovery that a large percentage of grains collected during a 2003 excursion predate the formation of the solar system." The dust, collected in 2003 using a NASA research jet, came from the wake of Comet 26P/Grigg-Skjellerup. "Thousands of grains have been analyzed, but so far the richest haul of pre-solar particles appears to be from the sample collected on plastic plates covered in sticky silicon oil flown outside the NASA U2 aircraft." According to the article, "The Stardust team has been looking for similar particles among its samples, but so far has come up empty-handed."

Coffee, Dessert, and Conversation after the Meeting: Reviving an NCA Tradition

By Jeff Guerber

Long-time NCA members will recall that years ago, following the monthly meetings we would gather at the old Hot Shoppes in Bethesda for coffee, dessert, and conversation in a very informal setting. Some of us would like to revive this tradition, so after the meeting, everyone is invited to join us at Plato's Diner in College Park.

Plato's is 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.

Calendar of Events

NCA Mirror- and Telescope-making Classes: Fridays, Sep. 11, 18, 25, 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 gfbrendenburg@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, Sep. 12 at 5:30 pm, preceding the meeting, at the [Garden Restaurant](#) in the University of Maryland University College Inn and Conference Center.

Upcoming NCA Meetings at the University of Maryland Observatory

Sep. 12, 2009
John Chambers (DTM)
How Jupiter and Saturn influenced the development of the Solar System (TBC) The IYA theme of the month is Jupiter.

Oct. 10, 2009
Robert Olling (U Md)
Proper Motions Within Andromeda
The IYA theme of the month is Andromeda.

Yes, I'd like to join NATIONAL CAPITAL ASTRONOMERS!

Name: Date: ____/____/____

Street address:

City/State/ZIP:

Telephone: ____-____-____ E-mail:

Would you prefer to get Star Dust by e-mail? _____

MEMBERSHIP CATEGORIES AND ANNUAL DUES RATES

All members receive Star Dust, the monthly newsletter announcing NCA activities. The basic dues cover an electronic copy of Star Dust; paper copies are \$10 extra. You may also choose to get Sky & Telescope magazine at the discounted rate of \$33.

Student Membership	\$ 5
Paper copy of Star Dust.....	\$10
Sky & Telescope	\$33
Total.....	_____

Individual/Family Membership.....	\$10
Paper copy of Star Dust.....	\$10
Sky & Telescope	\$33
Total.....	_____

Please mail this form with your check payable to National Capital Astronomers to:
Mr. Michael L. Brabanski, NCA Treasurer; 10610 Bucknell Drive, Silver Spring, MD 20902-4254

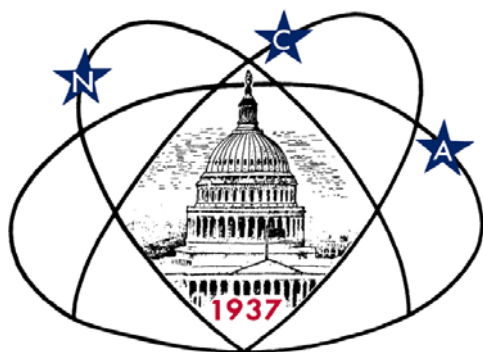
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First Class

Dated Material



Next NCA Mtg:

Sep. 12

7:30 pm

@ UM Obs

Dr. John Chambers

Inside This Issue

Preview of Sep. 2009 Talk.....	1
President's Message.....	1
Exploring the Sky Schedule.....	3
Treasurer's Report.....	3
Observing Pluto.....	4
Occultations.....	5
Science News.....	6
Speaker Reviews.....	6
Coffee and Desserts.....	7
Calendar.....	7