Current Astronomy

RIVER BEND ASTRONOMY CLUB NEWSLETTER

MARCH/APRIL 2011

The Rosette Nebula (NGC2237 / 2239) and open cluster NGC2244 in Monoceros.
Photo by Gary Kronk.

INSIDE THIS ISSUE

River Bend Astronomy club serves astronomy enthusiasts of the American Bottom region, the Mississippi River bluffs and beyond, fostering observation, education, and a spirit of camaraderie.

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Affiliated with the Astronomical League, dedicated to fostering astronomical education, providing incentives for astronomical observation and research, and assisting communication among amateur astronomical societies. www.astroleague.org

Check out our **online calendar** on the NASA Night Sky Network, a nationwide coalition of amateur astronomy clubs bringing the science, technology and inspiration of NASA's missions to the general public.

Monthly Meetings

Saturday, March 5, 2011 • 7:00 PM
Saturday, April 2, 2011 • 7:00 PM
Saturday, May 7, 2011 • 7:00 PM
For meeting locations, please see our calendar at www.riverbendastro.org.

Looked Up Lately?

Join River Bend Astronomy Club

Want to learn more about astronomy? The members of River Bend Astronomy Club invite you to join. You won't need expensive tools or special skills – just a passion for observing the natural world.

- Meetings offer learning, peeks through great telescopes, and fun under the stars.
- You will receive the club newsletter, *Current Astronomy*, packed with news and photos.
- Get connected with our member-only online discussion group.
- Borrow from the club's multimedia library.
- Borrow from the club's selection of solar telescopes.
- And that's not all! Through club membership you also join the Astronomical League, with its special programs and colorful quarterly newsletter *The Reflector* to enrich your hobby.
- We meet monthly, observe regularly, email news and quips constantly, and generally have a good time. Won't you join us?

Name_____
Address_____
City_____State_____Zip_____
Phone_____
Email address_____
Where did you hear of our club?_____
_____
How long have you been interested in astronomy?_____
Do you have optical equipment?_____
Are you afraid of the dark? ___Yes ___No (just kidding)
I am submitted my application for:
_____Adult Membership(s) ___Youth Membership(s)
$20/year each $15/year each
(18 yrs. and up) (17 yrs. and under)
I enclose a check for $_____ made out to:
Mike Veith, Treasurer, RBAC
Signature_____
Date_____

Mail to: **River Bend Astronomy Club**
c/o Mike Veith, 1121 St. Louis St., Edwardsville, IL 62025.

2011 Messier Marathon

Saturday, April 2, 2011
6:00PM – early AM
Carlyle Lake at the Tamalco Boat Ramp

The River Bend Astronomy Club presents its 2011 Messier Marathon! The Messier Marathon will serve as the April meeting of the River Bend Astronomy Club.

Attempt to view all the Messier Objects in one night! This is possible near the Spring Equinox each year. Be prepared to observe into the early morning hours. Most of all, relax, and enjoy the sky! There is no cost for members of the River Bend Astronomy Club.

How to Get to Tamalco Boat Ramp
FROM ST. LOUIS: From 1-55/70, take I-70 East.
Turn south on IL 127.
FROM HIGHLAND: IL 143 north out of town.
Turn east on IL 143.
Turn right (south) on IL 127.
Turn left on Tamalco Road.
There will be a left turn after about a mile.
Turn right at the T in the road to stay on Tamalco Road.
Go to the boat ramp straight ahead.
Turn right into the parking lot.

What to Bring
Wear warm clothing in layers. Bring mosquito repellent, medications, first-aid kit, cell phone, and jumper cables. For your own comfort, bring a table, chairs, cooler, food, snacks, drinks, water, and a blanket. Some folks may decide to go to breakfast after the marathon, so remember to bring a few bucks for that if you plan on going. And of course, remember your telescope & accessories, binoculars, power supply, all cords, extra batteries, red lights, star charts, and Messier objects list. Most of all have fun!

Important Notes
- Please note that there are no restroom facilities at Tamalco boat ramp. Please plan accordingly.
- There is no cloud-out date planned. In case of inclement weather, the Messier Marathon will be canceled.
- See pages 4, 5, and 6 for a check list of all 110 Messier objects in Marathon sequence.

RBAC

The Andromeda Galaxy (M31).
Photo by Gary Kronk.

2011 Messier Marathon Log Sheet – in sequence

List from the book *The Messier Marathon Observer's Guide* by Don Machholz.

No.	M#	NGC#	Con	Type	ra	dec	B	dim	d
1.	M77	1068	Cet	5	02 42.7	-00 01	8.9	7x6	60000
2.	M74	628	Psc	5	01 36.7	+15 47	9.4	10.2x9.5	35000
3.	M33	598	Tri	5	01 33.9	+30 39	5.7	73x45	3000
4.	M31	224	And	5	00 42.7	+41 16	3.4	178x63	2900
5.	M32	221	And	6	00 42.7	+40 52	8.1	8x6	2900
6.	M110	205	And	6	00 40.4	+41 41	8.5	17x10	2900
7.	M52	7654	Cas	1	23 24.2	+61 35	7.3	13.0	5.0
8.	M103	581	Cas	1	01 33.2	+60 42	7.4	6.0	8.5
9.	M76	650	Per	3	01 42.4	+51 34	10.1	2.7x1.8	3.4
10.	M34	1039	Per	1	02 42.0	+42 47	5.5	35.0	1.4
11.	M45	-	Tau	1	03 47.0	+24 07	1.6	110.0	0.38
12.	M79	1904	Lep	2	05 24.5	-24 33	7.7	8.7	42.1
13.	M42	1976	Ori	4	05 35.4	-05 27	4.0	85x60	1.6
14.	M43	1982	Ori	4	05 35.6	-05 16	9.0	20x15	1.6
15.	M78	2068	Ori	4	05 46.7	+00 03	8.3	8x6	1.6
16.	M1	1952	Tau	9	05 34.5	+22 01	8.4	6x4	6.3
17.	M35	2168	Gem	1	06 08.9	+24 20	5.3	28.0	2.8
18.	M37	2099	Aur	1	05 52.4	+32 33	6.2	24.0	4.4
19.	M36	1960	Aur	1	05 36.1	+34 08	6.3	12.0	4.1
20.	M38	1912	Aur	1	05 28.4	+35 50	7.4	21.0	4.2
21.	M41	2287	CMa	1	06 46.0	-20 44	4.6	38.0	2.3
22.	M93	2447	Pup	1	07 44.6	-23 52	6.0	22.0	3.6
23.	M47	2422	Pup	1	07 36.6	-14 30	5.2	30.0	1.6
24.	M46	2437	Pup	1	07 41.8	-14 49	6.0	27.0	5.4
25.	M50	2323	Mon	1	07 03.2	-08 20	6.3	16.0	3
26.	M48	2548	Hya	1	08 13.8	-05 48	5.5	54.0	1.5
27.	M44	2632	Cnc	1	08 40.1	+19 59	3.7	95.0	0.577
28.	M67	2682	Cnc	1	08 50.4	+11 49	6.1	30.0	2.7
29.	M95	3351	Leo	5	10 44.0	+11 42	9.7	4.4x3.3	38000
30.	M96	3368	Leo	5	10 46.8	+11 49	9.2	6x4	38000
31.	M105	3379	Leo	6	10 47.8	+12 35	9.3	2.0	38000
32.	M65	3623	Leo	5	11 18.9	+13 05	9.3	8x1.5	35000
33.	M66	3627	Leo	5	11 20.2	+12 59	8.9	8x2.5	35000
34.	M81	3031	UMa	5	09 55.6	+69 04	6.9	21x10	12000
35.	M82	3034	UMa	7	09 55.8	+69 41	8.4	9x4	12000
36.	M97	3587	UMa	3	11 14.8	+55 01	9.9	3.4x3.3	2.6
37.	M108	3556	UMa	5	11 11.5	+55 40	10.0	8x1	45000
38.	M109	3992	UMa	5	11 57.6	+53 23	9.8	7x4	55000
39.	M40	Win4	UMa	C	12 22.4	+58 05	8.4	0.8	0.51
40.	M106	4258	CVn	5	12 19.0	+47 18	8.4	19x8	25000
41.	M94	4736	CVn	5	12 50.9	+41 07	8.2	7x3	14500
42.	M63	5055	CVn	5	13 15.8	+42 02	8.6	10x6	37000
43.	M51	5194	CVn	5	13 29.9	+47 12	8.4	11x7	37000
44.	M101	5457	UMa	5	14 03.2	+54 21	7.9	22.0	27000
45.	M102?	5866	Dra	8	15 06.5	+55 46	9.9	5.2x2.3	40000
46.	M53	5024	Com	2	13 12.9	+18 10	7.6	12.6	59.7
47.	M64	4826	Com	5	12 56.7	+21 41	8.5	9.3x5.4	19000
48.	M3	5272	CVn	2	13 42.2	+28 23	6.2	16.2	33.9
49.	M98	4192	Com	5	12 13.8	+14 54	10.1	9.5x3.2	60000

2011 Messier Marathon Log Sheet – in sequence

No.	M#	NGC#	Con	Type	ra	dec	B	dim	d
50.	M99	4254	Com	5	12 18.8	+14 25	9.9	5.4x4.8	60000
51.	M100	4321	Com	5	12 22.9	+15 49	9.3	7x6	60000
52.	M85	4382	Com	8	12 25.4	+18 11	9.1	7.1x5.2	60000
53.	M84	4374	Vir	8	12 25.1	+12 53	9.1	5.0	60000
54.	M86	4406	Vir	8	12 26.2	+12 57	8.9	7.5x5.5	60000
55.	M87	4486	Vir	6	12 30.8	+12 24	8.6	7.0	60000
56.	M89	4552	Vir	6	12 35.7	+12 33	9.8	4.0	60000
57.	M90	4569	Vir	5	12 36.8	+13 10	9.5	9.5x4.5	60000
58.	M88	4501	Com	5	12 32.0	+14 25	9.6	7x4	60000
59.	M91	4548	Com	5	12 35.4	+14 30	10.2	5.4x4.4	60000
60.	M58	4579	Vir	5	12 37.7	+11 49	9.7	5.5x4.5	60000
61.	M59	4621	Vir	6	12 42.0	+11 39	9.6	5x3.5	60000
62.	M60	4649	Vir	6	12 43.7	+11 33	8.8	7x6	60000
63.	M49	4472	Vir	6	12 29.8	+08 00	8.4	9x7.5	60000
64.	M61	4303	Vir	5	12 21.9	+04 28	9.7	6x5.5	60000
65.	M104	4594	Vir	5	12 40.0	-11 37	8.0	9x4	50000
66.	M68	4590	Hya	2	12 39.5	-26 45	7.8	12.0	33.3
67.	M83	5236	Hya	5	13 37.0	-29 52	7.6	11x10	15000
68.	M5	5904	Ser	2	15 18.6	+02 05	5.6	17.4	24.5
69.	M13	6205	Her	2	16 41.7	+36 28	5.8	16.6	25.1
70.	M92	6341	Her	2	17 17.1	+43 08	6.4	11.2	26.7
71.	M57	6720	Lyr	3	18 53.6	+33 02	8.8	1.4x1.0	2.3
72.	M56	6779	Lyr	2	19 16.6	+30 11	8.3	7.1	32.9
73.	M29	6913	Cyg	1	20 23.9	+38 32	7.1	7.0	4.0
74.	M39	7092	Cyg	1	21 32.2	+48 26	4.6	32.0	0.825
75.	M27	6853	Vul	3	19 59.6	+22 43	7.4	8.0x5.7	1.25
76.	M71	6838	Sge	2	19 53.8	+18 47	8.2	7.2	12.7
77.	M107	6171	Oph	2	16 32.5	-13 03	7.9	10.0	20.9
78.	M12	6218	Oph	2	16 47.2	-01 57	6.7	14.5	16.0
79.	M10	6254	Oph	2	16 57.1	-04 06	6.6	15.1	14.4
80.	M14	6402	Oph	2	17 37.6	-03 15	7.6	11.7	29.0
81.	M9	6333	Oph	2	17 19.2	-18 31	7.7	9.3	26.7
82.	M4	6121	Sco	2	16 23.6	-26 32	5.6	26.3	7.2
83.	M80	6093	Sco	2	16 17.0	-22 59	7.3	8.9	32.6
84.	M19	6273	Oph	2	17 02.6	-26 16	6.8	13.5	28.4
85.	M62	6266	Oph	2	17 01.2	-30 07	6.5	14.1	22.5
86.	M6	6405	Sco	1	17 40.1	-32 13	5.3	25.0	2
87.	M7	6475	Sco	1	17 53.9	-34 49	4.1	80.0	0.8
88.	M11	6705	Sct	1	18 51.1	-06 16	6.3	14.0	6
89.	M26	6694	Sct	1	18 45.2	-09 24	8.0	15.0	5
90.	M16	6611	Ser	1	18 18.8	-13 47	6.4	7.0	7
91.	M17	6618	Sgr	4	18 20.8	-16 11	7.0	11.0	5
92.	M18	6613	Sgr	1	18 19.9	-17 08	7.5	9.0	4.9
93.	M24	>6603	Sgr	B	18 16.9	-18 29	4.6	90	10
94.	M25	I4725	Sgr	1	18 31.6	-19 15	6.5	40.0	2
95.	M23	6494	Sgr	1	17 56.8	-19 01	6.9	27.0	2.15
96.	M21	6531	Sgr	1	18 04.6	-22 30	6.5	13.0	4.25
97.	M20	6514	Sgr	4	18 02.6	-23 02	9.0	28.0	5.2
98.	M8	6523	Sgr	4	18 03.8	-24 23	6.0	90x40	5.2
99.	M28	6626	Sgr	2	18 24.5	-24 52	6.8	11.2	18.6
100.	M22	6656	Sgr	2	18 36.4	-23 54	5.1	24.0	10.4

2011 Messier Marathon Log Sheet - in sequence

No.	M#	NGC#	Con	Type	ra	dec	B	dim	d
101.	M69	6637	Sgr	2	18 31.4	-32 21	7.6	7.1	28.0
102.	M70	6681	Sgr	2	18 43.2	-32 18	7.9	7.8	29.4
103.	M54	6715	Sgr	2	18 55.1	-30 29	7.6	9.1	88.7
104.	M55	6809	Sgr	2	19 40.0	-30 58	6.3	19.0	17.6
105.	M75	6864	Sgr	2	20 06.1	-21 55	8.5	6.0	61.3
106.	M15	7078	Peg	2	21 30.0	+12 10	6.2	12.3	33.6
107.	M2	7089	Aqr	2	21 33.5	-00 49	6.5	12.9	37.9
108.	M72	6981	Aqr	2	20 53.5	-12 32	9.3	5.9	55.4
109.	M73	6994	Aqr	A	20 58.9	-12 38	9.0	2.8	2.0
110.	M30	7099	Cap	2	21 40.4	-23 11	7.2	11.0	26.1

Key:
Type: 1=Open Cluster, 2=Globular Cluster, 3=Planetary Nebula, 4=Diffuse Nebula, 5=Spiral Galaxy, 6=Elliptical Galaxy, 7=Irregular Galaxy, 8=Lenticular (S0) Galaxy, 9=Supernova Remnant, A=Group or Asterism of Four stars, B=Star Cloud, C=Double Star
ra: right ascension in hours minutes.decimal seconds
dec: declination in degrees minutes
B: apparent visual brightness in magnitudes
dim: apparent (angular) dimension in arc minutes
d: distance in kilo-light-years

Messier Marathon Notes

Observer Name: _____

Date: _____

Location: _____

Telescope(s) used: _____

Eyepiece(s) used: _____

Sky conditions: _____

Notes: _____

_____

_____

_____

Gary Kronk's Messier Objects

By Bill Breeden

Gary Kronk, founder of the River Bend Astronomy Club and President emeritus, has purchased a new Canon T2i camera, modified for astrophotography. He installed it in his observatory and will be using it over the next several months to image all 110 Messier objects.

I thought it would be fun to create a DVD that showcases his best Messier images. So we have decided to make it happen! Gary is hard at work on clear nights imaging Messier objects as they climb to the meridian, and subsequently processing those images. As he sends them to me, I am adding them to a slideshow along with some facts about each object. Once the movie is created, I am planning on setting it to music and creating a DVD for members of the River Bend Astronomy Club. This will be much like the previous two movies I produced: *The Messier Objects* and *The Caldwell Objects*, except this new movie will feature only images from our very own astronomer and comet expert Mr. Kronk!

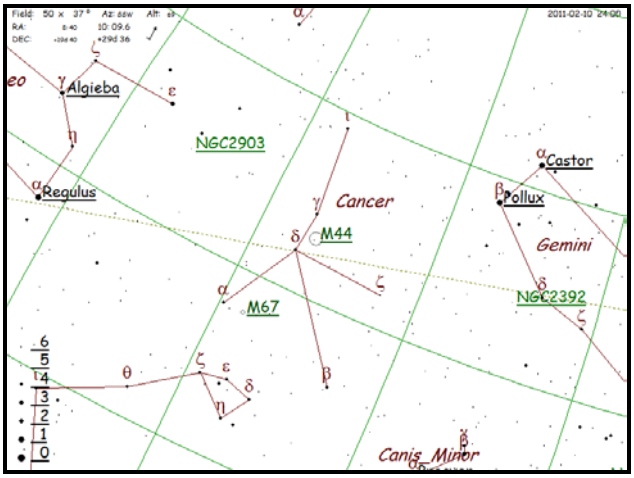
Gary and I are working hard on this project over the next several months. I will certainly keep you posted! **RBAC**

M35, open cluster in Gemini.
Photo by Gary Kronk.

Find the Beehive Cluster this Spring

By Bill Breeden

The Beehive Cluster, also known as Preseape or M44, appears high in the sky in the southeast on March and April nights. Look for the Gemini Twins, appearing as the bright stars Pollux and Castor in the southeast. M44 appears about 20° below Pollux in the southeast.



Finder chart for The Beehive (M44). Image from HNSKY planetarium software by Han Kleijn.

M44 resides in Cancer the Crab, a well-known but very dim constellation on the ecliptic. M44's position near the ecliptic means that the Moon and planets can frequently be found among this sparkling star cluster. No planets will be near it this March or April, but the Moon will be somewhat close to it on March 15 and April 12.

M44 is a fairly large object at 1.5° wide. This means it is best viewed with binoculars or with a low power eyepiece. A Dobsonian telescope with a 20mm to 26mm eyepiece would be ideal to observe this object in all its beauty. Enjoy! **RBAC**

Planets in Strange Places

By Trudy E. Bell

Red star, blue star, big star, small star—planets may form around virtually any type or size of star throughout the universe, not just around mid-sized middle-aged yellow stars like the Sun. That's the surprising implication of two discoveries in 2006 from the 0.85-meter-diameter Spitzer Space Telescope, which is exploring the universe from orbit at infrared (heat) wavelengths blocked by the Earth's atmosphere.

At one extreme are two blazing, blue "hypergiant" stars 180,000 light-years away in the Large Magellanic Cloud, one of the two companion galaxies to our Milky Way. The stars, called R 66 and R 126, are respectively 30 and 70 times the mass of the Sun, "about as massive as stars can get," said Joel Kastner, professor of imaging science at the Rochester Institute of Technology in New York. R 126 is so luminous that if it were placed 10 parsecs (32.6 light-years) away—a distance at which the Sun would be one of the dimmest stars visible in the sky—the hypergiant would be as bright as the full moon, "definitely a daytime object," Kastner remarked.

Such hot stars have fierce solar winds, so Kastner and his team are mystified why any dust in the neighborhood hasn't long since been blown away. But there it is: an unmistakable spectral signature that both hypergiants are surrounded by mammoth disks of what might be planet-forming dust and even sand.

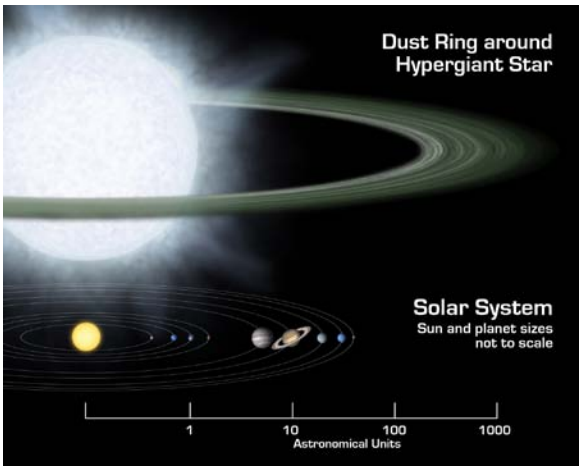
At the other extreme is a tiny brown dwarf star called Cha 110913-773444, relatively nearby (500 light-years) in the Milky Way. One of the smallest brown dwarfs known, it has less than 1 percent the mass of the Sun. It's not even massive enough to kindle thermonuclear reactions for fusing hydrogen into helium. Yet this miniature "failed star," as brown dwarfs are often called, is also surrounded by a flat disk of dust that may eventually clump into planets. (This brown dwarf discovery was made by a group led by Kevin Luhman of Pennsylvania State University.)

Although actual planets have not been detected (in part because of the stars' great distances), the spectra of the hypergiants show that their dust is composed of forsterite, olivine, aromatic hydrocarbons, and other geological substances found on Earth.

These newfound disks represent "extremes of the environments in which planets might form," Kastner said. "Not what you'd expect if you think our solar system is the rule."

Hypergiants and dwarfs? The Milky Way could be crowded with worlds circling every kind of star imaginable—very strange, indeed.

Keep up with the latest findings from the Spitzer at www.spitzer.caltech.edu. Kids and their grownup friends can enjoy beautiful images from Spitzer while playing Spitzer Concentration at The Space Place (spaceplace.nasa.gov/en/kids/spitzer/concentration)..



Artist's rendering compares size of a hypothetical hypergiant star and its surrounding dusty disk to that of our solar system.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Thank Goodness the Sun is Single

By Trudy E. Bell

It's a good thing the Sun is single. According to new research, Sun-like stars in close double-star systems "can be okay for a few billion years—but then they go bad," says Jeremy Drake of the Harvard-Smithsonian Astrophysical Observatory in Cambridge, Mass.

How bad? According to data from NASA's Spitzer Space Telescope, close binary stars can destroy their planets along with any life. Drake and four colleagues reported the results in the September 10, 2010, issue of The Astrophysical Journal Letters.

Our Sun, about 864,000 miles across, rotates on its axis once in 24.5 days. "Three billion years ago, roughly when bacteria evolved on Earth, the Sun rotated in only 5 days," explains Drake. Its rotation rate has been gradually slowing because the solar wind gets tangled up in the solar magnetic field, and acts as a brake.

But some sun-like stars occur in close pairs only a few million miles apart. That's only about five times the diameter of each star—so close the stars are gravitationally distorted. They are actually elongated toward each other. They also interact tidally, keeping just one face toward the other, as the Moon does toward Earth.

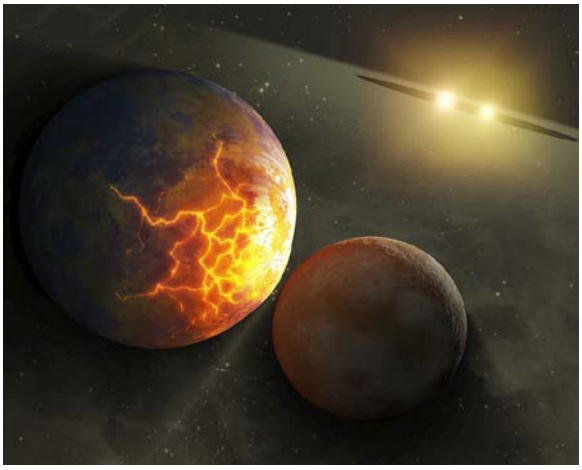
Such a close binary is "a built-in time bomb," Drake declares. The continuous loss of mass from the two stars via solar wind carries away some of the double-star system's angular momentum, causing the two stars to spiral inward toward each other, orbiting faster and faster as the distance shrinks. When each star's rotation period on its axis is the same as its orbital period around the other, the pair effectively rotates as a single body in just 3 or 4 days.

Then, watch out! Such fast spinning intensifies the magnetic dynamo inside each star. The stars "generate bigger, stronger 'star spots' 5 to 10 percent the size of the star—so big they can be detected from Earth," Drake says. "The stars also interact magnetically very violently, shooting out monster flares."

Worst of all, the decreasing distance between the two stars "changes the gravitational resonances of the planetary system," Drake continued, destabilizing the orbits of any planets circling the pair. Planets may so strongly perturbed they are sent into collision paths. As they repeatedly slam into each other, they shatter into red-hot asteroid-sized bodies, killing any life. In as short as a century, the repeated collisions pulverize the planets into a ring of warm dust.

The infrared glow from this pulverized debris is what Spitzer has seen in some self-destructing star systems. Drake and his colleagues now want to examine a much bigger sample of binaries to see just how bad double star systems really are.

They're already sure of one thing: "We're glad the Sun is single!"



Planetary collisions such as shown in this artist's rendering could be quite common in binary star systems where the stars are very close.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

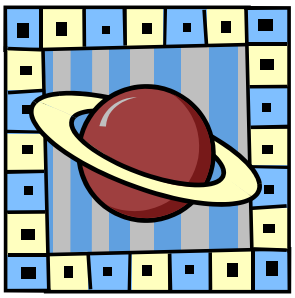
RBAC's Monthly Observing Lists

These lists include brighter deep-sky objects that transit near 10:00 PM each month.

March Observing List
Prepared by Bill Breeden

Double Stars
_____ 38 Lyncis SAO 61391 Const. LYN Type DS RA 09 18.8 Decl. +36° 48' Mag. 3.9 6.6
_____ Iota Cancri SAO 80415 Const. CNC Type DS RA 08 46.7 Decl. +28° 46' Mag. 4.2 6.6
_____ Zeta Cancri SAO 97645 Const. CAN Type DS RA 08 12.2 Decl. +17° 39' Mag. 5.6 6.0
Messier Objects
_____ M44 NGC2632 Preseape or Beehive Cluster Const. CNC Type OC RA 08 40.1 Decl. +19 59 Mag. 3.7
_____ M48 NGC2548 Const. HYA Type OC RA 08 13.8 Decl. -05 48 Mag. 5.3
_____ M67 NGC2682 Little Beehive Cluster Const. CNC Type OC RA 08 50.4 Decl. +11 49 Mag. 6.1
_____ M81 NGC3031 Ursa Major Galaxies Const. UMA Type GAL RA 09 55.6 Decl. +69 04 Mag. 7.9
_____ M82 NGC3034 Ursa Major Galaxies Const. UMA Type GAL RA 09.55.8 Decl. +69 41 Mag. 8.8
Caldwell Objects
_____ C048 NGC2775 Const. CNC Type SG RA 09 10 18.00 Decl. +07 02 00.0 Mag. 10.3
_____ C054 NGC2506 Const. MON Type OC RA 08 00 12.00 Decl. -10 47 00.0 Mag. 7.6
_____ C085 IC2391 Omicron Vela Cluster Const. VEL Type OC RA 08 40 12.00 Decl. -53 04 00.0 Mag. 2.5
_____ C090 NGC2867 Const. CAR Type PN RA 09 21 24.00 Decl. -58 19 00.0 Mag. 9.7
Royal Astronomical Society of Canada Objects
_____ RASC36 NGC2539 Const. PUP Type OC RA 08 10.7 Decl. -12 50 Mag. 6.5
_____ RASC38 NGC2655 Const. CAM Type G-Sa RA 08 55.6 Decl. +78 13 Mag. 10.1
_____ RASC39 NGC2683 Const. LYN Type G-Sb RA 08 52.7 Decl. +33 25 Mag. 9.7
_____ RASC40 NGC2841 Const. UMA Type G-Sb RA 09 22.0 Decl. +50 58 Mag. 9.3
_____ RASC51 NGC3003 Const. LMI Type G-Sc RA 09 48.6 Decl. +33 25 Mag. 11.7
_____ RASC54 NGC2903 Const. LEO Type G-Sb RA 09 32.2 Decl. +21 30 Mag. 8.9

M46, open cluster in Puppis.
Photo by Gary Kronk.



April Observing List

Prepared by Bill Breeden

Double Stars

_____ 54 Leonis SAO 81583 Const. LEO Type DS RA 10 55.6 Decl. +24° 45' Mag. 4.5 6.3
_____ Alpha Leonis SAO 98967 Regulus Const. LEO Type DS RA 10 08.4 Decl. +11° 58' Mag. 1.4 7.7
_____ Gamma Leonis SAO 81298 Algieba Const. LEO Type DS RA 10 20.0 Decl. +19° 51' Mag. 2.2 3.5
_____ N Hydrae SAO 179967 - Const. HYD Type DS RA 11 32.3 Decl. -29° 16' Mag. 5.8. 5.9

Messier Objects

_____ M65 NGC3623 Const. LEO Type GAL RA 11 18.9 Decl. +13 05 Mag. 9.3
_____ M66 NGC3627 Const. LEO Type GAL RA 11 20.2 Decl. +12 59 Mag. 8.2
_____ M95 NGC3351 Const. LEO Type GAL RA 10 44.0 Decl. +11 42 Mag. 10.4
_____ M96 NGC3368 Const. LEO Type GAL RA 10 46.8 Decl. +11 49 Mag. 9.1
_____ M97 NGC3587 Owl Nebula Const. UMA Type PN RA 11 14.8 Decl. +55 01 Mag. 9.9
_____ M105 NGC3379 Const. LEO Type GAL RA 10 47.8 Decl. +12 35 Mag. 9.2
_____ M108 NGC3556 Const. UMA Type GAL RA 11 11.5 Decl. +55 40 Mag. 10.7
_____ M109 NGC3992 Const. UMA Type GAL RA 11 57.6 Decl. +53 23 Mag. 10.8

Caldwell Objects

_____ C040 NGC3626 Const. LEO Type SG RA 11 20 06.00 Decl. +18 21 00.0 Mag. 10.9
_____ C053 NGC3115 Spindle Galaxy Const. SEX Type EG RA 10 05 12.00 Decl. -07 43 00.0 Mag. 9.1
_____ C059 NGC3242 Ghost of Jupiter Const. HYA Type PN RA 10 24 48.00 Decl. -18 38 00.0 Mag. 8.6
_____ C074 NGC3132 Const. VEL Type PN RA 10 07 42.00 Decl. -40 26 00.0 Mag. 8.2
_____ C079 NGC3201 Const. VEL Type GC RA 10 17 36.00 Decl. -46 25 00.0 Mag. 6.7
_____ C091 NGC3532 Const. CAR Type OC RA 11 06 24.00 Decl. -58 40 00.0 Mag. 3
_____ C092 NGC3372 Eta Carina Nebula Const. CAR Type BN RA 10 43 48.00 Decl. -59 52 00.0 Mag. 6.2
_____ C097 NGC3766 Const. CEN Type OC RA 11 36 06.00 Decl. -61 37 00.0 Mag. 5.3
_____ C100 IC2944 Lamda Centauri Cluster Const. CEN Type OC RA 11 36 36.00 Decl. -63 02 00.0 Mag. 4.5
_____ C102 IC2602 Theta Carina Cluster Const. CAR Type OC RA 10 43 12.00 Decl. -64 24 00.0 Mag. 1.9
_____ C109 NGC3195 Const. CHA Type PN RA 10 09 30.00 Decl. -80 52 00.0 Mag.

Royal Astronomical Society of Canada Objects

_____ RASC41 NGC3079 Const. UMA Type G-Sb RA 10 02.2 Decl. +55 41 Mag. 10.6
_____ RASC42 NGC3184 Const. UMA Type G-Sc RA 10 18.3 Decl. +41 25 Mag. 9.7
_____ RASC43 NGC3877 Const. UMA Type G-Sb RA 11 46.1 Decl. +47 30 Mag. 10.9
_____ RASC44 NGC3941 Const. UMA Type G-E3 RA 11 52.9 Decl. +36 59 Mag. 9.8
_____ RASC45 NGC4026 Const. UMA Type G-S0 RA 11 59.4 Decl. +50 58 Mag. 10.7
_____ RASC49 NGC3115 Const. SEX Type G-E6 RA 10 05.2 Decl. -07 43 Mag. 9.2
_____ RASC50 NGC3242 Ghost of Jupiter Const. HYA Type PN RA 10 24.8 Decl. -18 38 Mag. 8.6
_____ RASC52 NGC3344 Const. LMI Type G-Sc RA 10 43.5 Decl. +24 55 Mag. 9.9
_____ RASC53 NGC3432 Const. LMI Type G-SBm RA 10 52.5 Decl. +36 37 Mag. 11.3
_____ RASC55 NGC3384 Const. LEO Type G-E7 RA 10 48.3 Decl. +12 38 Mag. 9.9
_____ RASC56 NGC3521 Const. LEO Type G-Sb RA 11 05.8 Decl. -00 02 Mag. 8.7
_____ RASC57 NGC3607 Const. LEO Type G-E1 RA 11 16.9 Decl. +18 03 Mag. 10
_____ RASC58 NGC3628 Const. LEO Type G-Sb RA 11 20.3 Decl. +13 36 Mag. 9.5