

# The Objective View

Newsletter of the Northern Colorado Astronomical Society

August 2008

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Cheyenne Astronomical Society Aug 15 9 pm

Cheyenne Botanic Garden

<http://home.bresnan.net/~curranm/>

Chamberlin Observatory Open House, dusk to 10 pm

Aug 9, Sep 6, Oct 4, Nov 8, Dec 6 303 871 5172

<http://www.du.edu/~rstencil/Chamberlin/>

Longmont Astronomical Society August 21 7 – 9 pm

FRCC, 2121 Miller Rd. See new web page design at:

<http://www.longmontastro.org/>

**Next Meeting: August 7 7:30 pm**

**From Stars to Cars by Roger Appeldorn**

**Club Business at 7:15 pm**

**Discovery Science Center**

**703 E Prospect Ave, Fort Collins**

<http://www.ncastro.org/Sites/DiscoveryCtr.htm>

**Club Brochure:** [http://www.ncastro.org/Contrib/2008\\_Brochure.pdf](http://www.ncastro.org/Contrib/2008_Brochure.pdf)

## NCAS Programs

Sept 4 Dr Andrea Schweitzer Intl Year of Astronomy

Oct 2 Chad Moore Natl Park Service and Light Pollution

## Rocky Mountain National Park Starwatching

At Upper Beaver Meadows trailhead, Aug 8, 22 At end of July, please send a tally of your hours plus an estimate for August to Jeff\_Maugans at nps.gov

## Discovery Science Center Starwatch, South Parking Lot

September 5 7:30 pm

October 10 7:00 pm

November 7 6:30 pm

December 5 6:30 pm

## Other Events

Little Thompson Observatory Star Night: 7:30 pm TBA

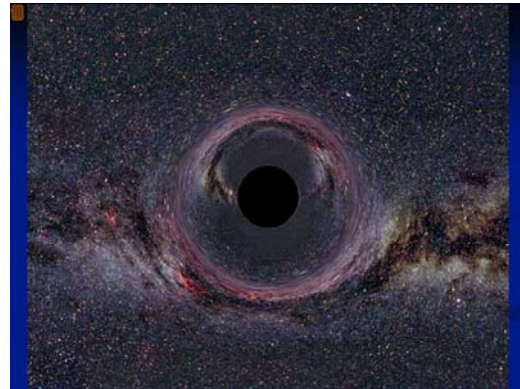
August 15 <http://www.starkids.org>

CSU Madison Macdonald Observatory Public Nights

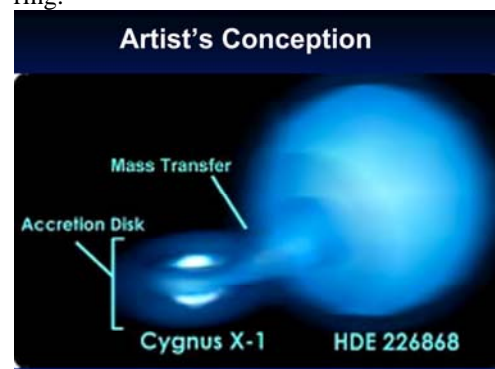
On East Drive, north of Pitkin Street

Tuesdays after dusk if clear, when class is in session

## July 10 Program: Black Holes, by Dave Chamness



The first indication that Cygnus X-1 existed came in 1964, when Geiger counters on Aerobee suborbital rockets were triggered by its emission. In 1970 the Uhuru satellite detected it and other sources. HDE 226868 is a BO supergiant with a temperature 31000 K. At 17.8 solar masses, it is 400,000 times the Sun's luminosity, and can be found in common telescopes as a 9<sup>th</sup> magnitude star near Eta Cygni. Distance is about 7-8000 l-y. In a 5.6 day orbit is a 7 to 10 solar mass black hole. The star's velocity is 75 km/second in a 56 day orbit. A bit of evidence for the tiny diameter of the black hole is variation of its X-ray emission on the order of milliseconds, impossible for a large object. X-ray flux is stable at soft energies and variable at hard energies approaching and over 100 keV. The iron k alpha line is a convenient marker. The object has a collimated radio jet which has inflated a 5 parsec ring.



The process on a galactic scale is illustrated by active galaxy M87 in Virgo. Its jet and a central gas disk have been imaged in detail by HST. The STIS revealed the extreme rotation rate near the center. M84 is a radio galaxy, and shows a central disk, and radio jets. M81 also has a central region with X-ray emission. An early hint that the Milky Way harbored a central black hole came from its radio emission dubbed Sagittarius A.

When infrared imaging probed the region of the nucleus with adaptive optics and resolution in the milliarcseconds, rapid stellar orbital motion points to an extremely massive, invisible central object. Lobes of gas extend perpendicular to the galactic plane. Conjecture about the possibility of black holes began in 1783 by Reverend John Michell, a British astronomer. The French physicist Pierre-Simon Laplace independently proposed them in 1796. Einstein field equations were solved by Karl Schwarzschild in 1916.

Escape velocity =  $\sqrt{2GM/R}$

The Schwarzschild Radius  $R = 2GM/c^2$

$R = 2.96 M/M_{\text{sun}} \text{ kilometers}$

At nuclear density of  $10^{18} \text{ kg/m}^3$  it takes 3 solar masses to form a black hole.

For more information, see:

[www.Blackholes.stardate.org](http://www.Blackholes.stardate.org)

Hubble Heritage:

[www.heritage.stsci.edu](http://www.heritage.stsci.edu)

Nature:

[www.nature.com](http://www.nature.com)

April 11 2005 and April 24 2008

NOVA Broadcast: Monster of the Milky Way

<http://www.pbs.org/wgbh/nova/blackhole/>

### Treasurer's Report for July 2008 from Robert Michael

Ck#225 to Astronomical League, dues-- \$245.00.

Cking balance \$748.79 (+ \$100. in petty cash)

Bob

### Weekend Under The Stars 2008

From: Gary Garzone <gary30views@comcast.net>

To: Front Range Astronomical Community <front-range-tac@seds.org>

Sent: Mon, 4 Aug 2008 7:05 pm

Subject: \* FRAC \* Fw: Another Fox -tastic weekend

-----Original Message-----

**From:** [Gary Garzone](mailto:gary30views@comcast.net)

**Date:** 8/3/2008 10:25:26 PM

**To:** [Front Range Astronomical Community](mailto:front-range-tac@seds.org)

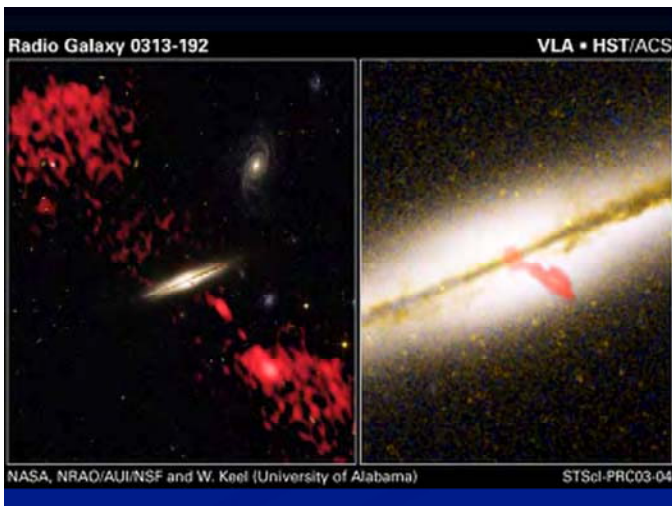
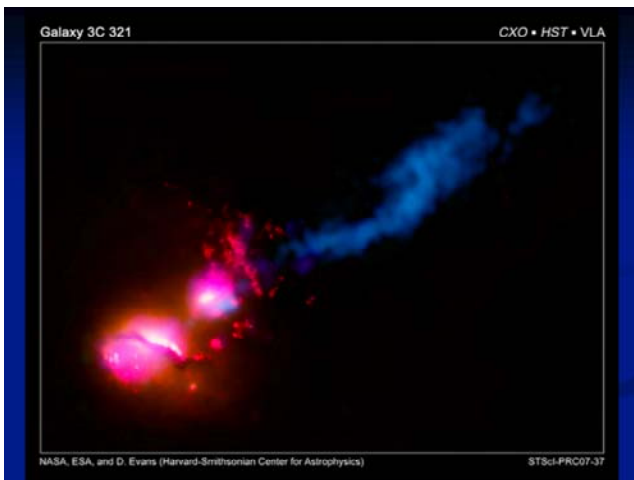
**Subject:** Another Fox -tastic weekend

Hey WUTS star party adventurers, Wow! Big turn out of people despite the high gas prices, we are a stubborn bunch, push, pull or drag our scopes there? Carol and I arrived Thursday early afternoon and crowds were already big, most were there from the night before. The first night, Thursday skies clouded up till 11:30 PM then total clear skies all night long, Friday was even better, clear all night long, Saturday we got some rain right at dark then clouds cleared at about 10 PM then clear till 3:30 am or so.

Thanks to Vern's maps, we once again we found 3 out of the 4 comets I was hunting for.

C2007 N3 Lulin is in constellation Sagittarius, magnitude 11.9  
 C2006 OF2 Broughton is in constellation Perseus, magnitude is 11.5  
 C2007 W1 Boattini is in constellation Aries, It is magnitude 7.7 in brightness and its coma is 10 arc minutes across. This was by far the favorite, big and easy to find comet, best one I have seen since McNaught for short two week visit 2 winters ago. Almost naked eye from Fox park. Mike Roos, Dan Lafaive, John Warren and myself did a tuff list of over 40 objects Saturday night. Some to 16.5 mag, tuff even for big scope.

We had lots of old time regulars there from LAS ,DAS , NCAS,



CAS, LASSO and many out of state people too . Total count was over 204 registered, few more than that with kids, and locals from Fox park who always drift in late for views.

Big thanks once again to Marcy and Marty Curran, all the the other CAS and LASSO members, who have kept this event going for all these years. 18 years. Are we that old? They had Jelm trip tours once again on Friday, 92 inch scope of University of Wyoming.

Once again I have to say this is still our best dark sky place, hands down, great people, big skies, lots of photons for all . Here are a few pictures, bye, Gary

### Perseid Meteor Maximum Aug 11-12

Over 60 shower members are possible per hour. The minor showers Delta Aquariids and Kappa Cygnids also add. Look for Earth-grazers overhead at dusk on the 11<sup>th</sup>.

[http://science.nasa.gov/headlines/y2008/22jul\\_perseiddawn.htm](http://science.nasa.gov/headlines/y2008/22jul_perseiddawn.htm)

### Best Looks

Moon By Venus 8/2 By Saturn 8/3, by Mars 8/4, Jupiter 8/13

Mercury By Venus 8/19 to 8/23 evenings

Venus Low in W at sunset

Mars Dim, closing on Venus and Mercury end of month

Jupiter In S in middle of night

Saturn Difficult, by Venus 8/13

Uranus In Aquarius, middle of night

Neptune In Capricornus, middle of night

Pluto In Sagittarius, middle of the night

## International Space Station Passes for Loveland – Fort Collins August 2008

Date	Mag	Starts			Max. altitude			Ends		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
5 Aug	-2.4	21:02:02	10	NW	21:04:57	80	NE	21:07:04	17	ESE
6 Aug	-0.7	21:28:10	10	WNW	21:30:41	27	SW	21:31:56	19	S
7 Aug	-2.3	20:18:28	10	NW	20:21:23	89	N	20:24:17	10	SE
8 Aug	-0.4	20:44:39	10	WNW	20:47:04	24	SW	20:49:29	10	S
25 Aug	0.4	05:46:17	10	S	05:48:10	16	SE	05:50:02	10	E
27 Aug	0.1	05:02:20	12	S	05:04:01	18	SE	05:06:03	10	E
28 Aug	-2.1	05:27:14	16	SW	05:29:21	64	SE	05:32:14	10	ENE
29 Aug	0.1	04:20:29	18	ESE	04:20:29	18	ESE	04:22:00	10	E
29 Aug	-1.4	05:52:11	10	W	05:54:55	37	NNW	05:57:39	10	NE
30 Aug	-2.3	04:45:12	71	SE	04:45:12	71	SE	04:48:02	10	ENE
31 Aug	-1.3	05:09:50	27	WNW	05:10:42	34	NNW	05:13:24	10	NE
1 Sep	0.6	04:02:51	18	ENE	04:02:51	18	ENE	04:03:47	10	NE
1 Sep	-0.1	05:34:27	10	WNW	05:36:27	17	NNW	05:38:27	10	NNE
2 Sep	-0.3	04:27:22	25	N	04:27:22	25	N	04:29:05	10	NE
2 Sep	0.5	06:01:28	10	NNW	06:02:23	11	N	06:03:17	10	N
3 Sep	0.1	04:51:50	16	NNW	04:52:10	16	NNW	04:54:06	10	NNE

<http://www.heavens-above.com/main.aspx?lat=40.4997&lng=-105.05736&loc=Fort+Collins+CO+USA&alt=0&tz=MST>