

Wednesday, January 22, 2014

Facebook (optional); Twitter posts (not classroom related).

Astronomy in the news?

Confab in Santa Monica last week sponsored by Kavli Foundation to address how US ground-based astronomy prospers in era of reduced budgets, increasing global competition, competing public and private initiatives.

European Rosetta mission rendezvous with a comet after a complex 10-year voyage. Will survey and drop a probe onto the surface.

<http://www.cnn.com/2014/01/20/world/europe/rosetta-comet-probe/>



Videos on Friday:

Fingerprints of the stars. A lesson in how to study the stars and learn about the Universe. Look for how astronomers use spectra to study stars and their implications. <http://phdcomics.com/tv/#020>

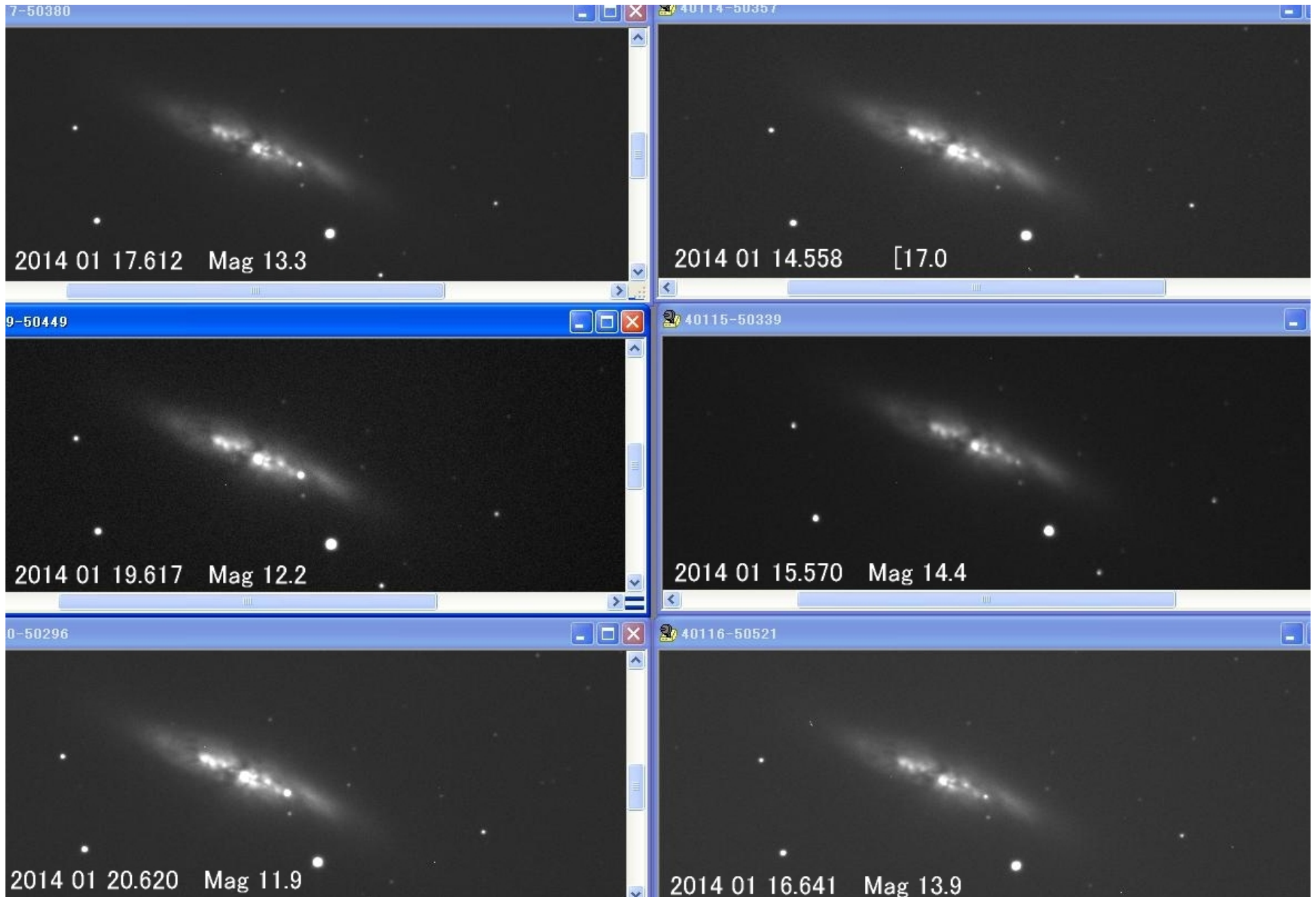
The Elegant Universe Part 1 minutes 26.3 to 38.4: the Quantum Café, the bizarre world of quantum mechanics. Look for how the forces of nature, other than gravity, work and the strange, probabilistic nature of the microscopic world. <http://www.pbs.org/wgbh/nova/physics/elegant-universe.html#elegant-universe-einstein>

Astronomy soon to be in the news!

Closest, (about 10 million light years) brightest supernova in nearly 30 years in M82 in the Big Dipper. First detected a week ago, only announced this morning. M82 is a famous, star-forming galaxy. Telescopes around the world, including at McDonald Observatory and the Hubble Space Telescope are being trained on the supernova. Look for the Big Dipper, site of M82 and this supernova for your Sky Watch project.



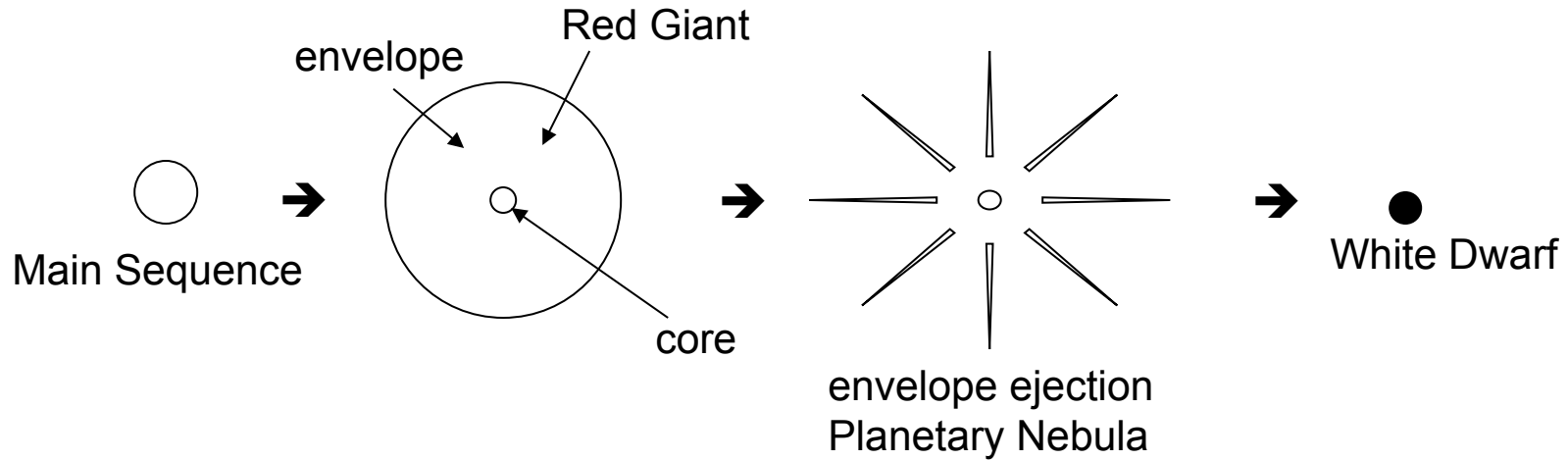
Early images of M82, supernova



Concept Check

What's on the cover of the book?

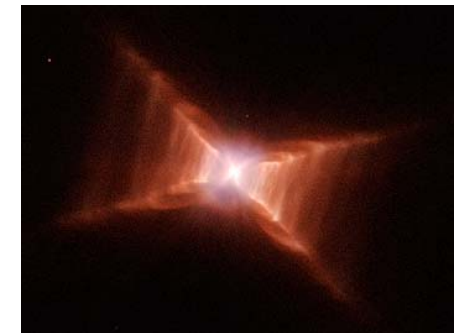
White Dwarfs (Section 5.1)



White dwarfs are the most common stellar “corpse.”
They come from low mass stars → plentiful.



Examples of planetary nebulae
surrounding new-born white
dwarfs



Sky Watch Extra Credit:.

Find red giant Betelgeuse in Orion Constellation

Other red giants

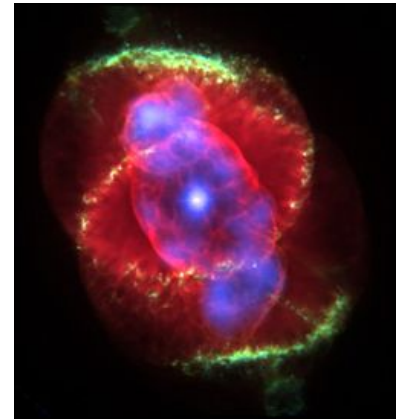
Find Constellation Draco, site of the Cat's Eye Nebula

Can't see nebula with naked eye, but can find Draco

Other planetary nebulae

Also Moon, Mars, Venus, Jupiter, Big Dipper for orientation, NSEW, learning to use a star chart, links on web page.

Check out links: [Whole Sky Chart](#)



Discussion Point:

Why are white dwarfs called white dwarfs?

White Dwarfs (Section 5.1)

White Dwarf – dense core left behind by low mass stars (less than 8 solar masses) after red giant and planetary nebular phase.

Essentially every white dwarf formed since beginning of the Galaxy is still here 10-100 billion of them (~ 100 billion stars total), but a few white dwarfs have blown up.

Most white dwarfs are dim, undiscovered, we see only those nearby, none naked eye

Sirius, brightest star in the sky, has a white dwarf companion. Can't see the white dwarf with the naked eye, too small, dim, but Sirius is easy if you look for it at the right time.

Find Sirius for the extra credit sky watch project.

Discussion Points:

White dwarfs have about the same mass as the Sun and about the same radius as the Earth.

How does the gravity of a white dwarf compare to the Sun and the Earth, and why?