



Herschel Space Observatory

The Multiwavelength Universe

Wavelength Summary Table

Spectral regime	Wavelength	Frequency	Temperature	Types of objects
Gamma Ray				
X-ray				
Ultraviolet (UV)				
Visible				
Near-Infrared (NIR)				
Mid-infrared (MIR)				
Far-infrared (FIR)				
Sub-mm and millimetre				
Microwave				
Radio				

Name:

Date:



Herschel Space Observatory

The Multiwavelength Universe

Links to Objects

Below are links to the various objects. The codes in brackets are the name you may find it under.

Links are given for finding the object in Chromoscope, as well as a few other links to more details.

Using Chromoscope:

- Click the link to open Chromoscope with the object centred.
- Use the "+" and "-" keys (or buttons on the screen) to zoom in and out, and drag the sky around to explore the region.
- Turn on and off constellation labels by pressing "L"
- Use the slider in the top right to fade between wavelengths shown.
- You can re-order the wavelengths by dragging their names in order to easily compare different wavelengths.
- For more help, press the "h" key.

Crab (M1)

Chromoscope: <http://www.chromoscope.net/?l=-175.4429&b=-5.7847&w=2.00&o=g,x,v,a,f,m,r&z=6>

Wikipedia: http://en.wikipedia.org/wiki/Crab_Nebula

Cool Cosmos:

http://coolcosmos.ipac.caltech.edu/cosmic_classroom/multiwavelength_astronomy/multiwavelength_museum/m1.html

Chandra: <http://chandra.harvard.edu/photo/1999/0052/>

Spitzer: <http://www.spitzer.caltech.edu/Media/mediaimages/sig/sig05-004.shtml>

Herschel: <http://herschel.cf.ac.uk/results/crab-nebula>

Centaurus A (NGC 5128)

Chromoscope: <http://www.chromoscope.net/?l=-50.4844&b=19.4172&w=2.00&o=g,x,v,a,f,m,r&z=6>

Wikipedia: http://en.wikipedia.org/wiki/Centaurus_A

Cool Cosmos:

http://coolcosmos.ipac.caltech.edu/cosmic_classroom/multiwavelength_astronomy/multiwavelength_museum/cenA.html

Chandra: <http://chandra.harvard.edu/photo/2008/cena/>

Name:

Date:



Herschel Space Observatory

The Multiwavelength Universe

Herschel: <http://herschel.cf.ac.uk/results/centaurus>

Antennae (NGC 4038)

Chromoscope: <http://www.chromoscope.net/?l=-73.0444&b=42.4614&w=2.00&o=g,x,v,a,f,m,r&z=6>

Wikipedia: http://en.wikipedia.org/wiki/Antennae_Galaxies

Cool Cosmos:

http://coolcosmos.ipac.caltech.edu/cosmic_classroom/multiwavelength_astronomy/multiwavelength_museum/ant.html

Chandra: <http://chandra.harvard.edu/photo/2000/0120/>

Spitzer: <http://spitzer.caltech.edu/images/1266-ssc2004-14a%20Fire-Within-the-Antennae-Galaxies>

Cassiopeia A (Cas A)

Chromoscope: <http://www.chromoscope.net/?l=111.7353&b=-2.1299&w=2.00&o=g,x,v,a,f,m,r&z=6>

Wikipedia: http://en.wikipedia.org/wiki/Cassiopeia_A

Cool Cosmos:

http://coolcosmos.ipac.caltech.edu/cosmic_classroom/multiwavelength_astronomy/multiwavelength_museum/casA.html

Chandra: <http://chandra.harvard.edu/photo/2006/casa/>

Spitzer: <http://www.spitzer.caltech.edu/Media/releases/ssc2005-14/release.shtml>

Large Magellanic Cloud (LMC)

Chromoscope: <http://www.chromoscope.net/?l=-79.5344&b=-32.8887&w=2.00&o=g,x,v,a,f,m,r&z=6>

Wikipedia: http://en.wikipedia.org/wiki/Large_Magellanic_Cloud

Cool Cosmos:

http://coolcosmos.ipac.caltech.edu/cosmic_classroom/multiwavelength_astronomy/multiwavelength_museum/lmc.html

Herschel: <http://herschel.cf.ac.uk/results/centaurus>

Triangulum (M33)

Chromoscope: <http://www.chromoscope.net/?l=133.6106&b=-31.3308&w=2.00&o=g,x,v,a,f,m,r&z=6>

Wikipedia: http://en.wikipedia.org/wiki/Triangulum_Galaxy

Cool Cosmos:

http://coolcosmos.ipac.caltech.edu/cosmic_classroom/multiwavelength_astronomy/multiwavelength_museum/m33.html

Name:

Date:



Herschel Space Observatory

The Multiwavelength Universe

Spitzer: <http://spitzer.caltech.edu/images/2625-sig09-003-Multispectral-Triangulum-Galaxy-3-Channel>

Orion (M42)

Chromoscope: <http://www.chromoscope.net/?l=-150.9866&b=-19.3813&w=2.00&o=g,x,v,a,f,m,r&z=6>

Wikipedia: http://en.wikipedia.org/wiki/Orion_Nebula

Chandra: <http://chandra.harvard.edu/photo/2007/orion/>

Spitzer:

<http://www.spitzer.caltech.edu/Media/releases/ssc2006-21/ssc2006-21a.shtml>

Vista: <http://www.eso.org/public/news/eso1006/>

M81

Chromoscope:

<http://www.chromoscope.net/?l=142.0920&b=40.8999&w=2.00&o=g,x,v,a,f,m,r&z=6>

Wikipedia: http://en.wikipedia.org/wiki/Messier_81

Cool Cosmos:

http://coolcosmos.ipac.caltech.edu/cosmic_classroom/multiwavelength_astronomy/multiwavelength_museum/m81.html

Chandra: <http://chandra.harvard.edu/photo/2008/m81/>

Spitzer: <http://spitzer.caltech.edu/images/2126-sig07-009-Multiwavelength-M81>

M87

Chromoscope: <http://www.chromoscope.net/?l=-76.2224&b=71.4990&w=2.00&o=g,x,v,a,f,m,r&z=6>

Wikipedia: http://en.wikipedia.org/wiki/Messier_87

Cool Cosmos:

http://coolcosmos.ipac.caltech.edu/cosmic_classroom/multiwavelength_astronomy/multiwavelength_museum/m87.html

Chandra: <http://chandra.harvard.edu/photo/2008/m87/>

Sombrero (M104)

Chromoscope: <http://www.chromoscope.net/?l=-61.5396&b=51.1494&w=2.00&o=g,x,v,a,f,m,r&z=6>

Wikipedia: http://en.wikipedia.org/wiki/Sombrero_Galaxy

Cool Cosmos:

http://coolcosmos.ipac.caltech.edu/cosmic_classroom/multiwavelength_astronomy/multiwavelength_museum/m104.html

Name:

Date:



Herschel Space Observatory

The Multiwavelength Universe

Chandra: <http://chandra.harvard.edu/photo/2007/sombrero/>

Spitzer: <http://www.spitzer.caltech.edu/Media/releases/ssc2005-11/release.shtml>

M82

Chromoscope:

<http://www.chromoscope.net/?l=141.4094&b=40.5667&w=2.00&o=g,x,v,a,f,m,r&z=6>

Wikipedia: http://en.wikipedia.org/wiki/Messier_82

Cool Cosmos:

http://coolcosmos.ipac.caltech.edu/cosmic_classroom/multiwavelength_astronomy/multiwavelength_museum/m82.html

Chandra: <http://chandra.harvard.edu/photo/2006/m82/>

Andromeda (M31)

Chromoscope: <http://www.chromoscope.net/?l=121.1741&b=-21.5727&w=2.00&o=g,x,v,a,f,m,r&z=6>

Wikipedia: http://en.wikipedia.org/wiki/Andromeda_Galaxy

Cool Cosmos:

http://coolcosmos.ipac.caltech.edu/cosmic_classroom/multiwavelength_astronomy/multiwavelength_museum/m31.html

Chandra: <http://chandra.harvard.edu/photo/2006/m31/>

Spitzer: <http://www.spitzer.caltech.edu/Media/releases/ssc2005-20/release.shtml>

Herschel: <http://herschel.cf.ac.uk/results/andromeda-galaxy>

Eagle Nebula (M16)

Chromoscope:

<http://www.chromoscope.net/?l=17.0865&b=1.0684&w=2.00&o=g,x,v,a,n,f,m,r&z=6>

Wikipedia: http://en.wikipedia.org/wiki/Eagle_Nebula

Herschel: <http://herschel.cf.ac.uk/results/eagle-nebula>

Chandra: <http://chandra.harvard.edu/photo/2007/m16/>

Name:

Date:



Herschel Space Observatory

The Multiwavelength Universe

Dumbbell Nebula (M27)

Chromoscope: <http://www.chromoscope.net/?l=60.8359&b=-3.6966&w=2.00&o=g,x,v,a,n,f,m,r&z=6>

Wikipedia: http://en.wikipedia.org/wiki/Dumbbell_Nebula

Spitzer:

http://www.nasa.gov/mission_pages/spitzer/multimedia/pia14417.html

Pleiades (M45)

Chromoscope: <http://www.chromoscope.net/?l=166.5707&b=-23.5212&w=2.00&o=g,x,v,a,n,f,m,r&z=6>

Wikipedia: <http://en.wikipedia.org/wiki/Pleiades>

ROSAT:

http://heasarc.gsfc.nasa.gov/docs/rosat/gallery/stars_clus_pleiades.html

Spitzer: <http://www.spitzer.caltech.edu/images/1766-ssc2007-07b-Pink-Pleiades>

Name:

Date:



Herschel Space Observatory

The Multiwavelength Universe

Question Sheet

1) What object are you looking at? Describe what it looks like at first sight.

2) Describe where it is in the sky. Is it in the Northern or Southern hemisphere as seen from Earth? Are there any nearby constellations?

3) How far away is it? Is that inside or outside our Galaxy?

4) Describe what type of object it is. Can you find any other pictures of it?

5) Does it look particularly different in any particular wavelengths? Does that tell you anything about it?

Name:

Date:



Herschel Space Observatory

The Multiwavelength Universe

6) What can you learn by comparing the appearance of the object at different wavelengths? What is it made of?

7) What is happening to the object? Is it doing anything?

Name:

Date: