

## Astro 102 – Lab #4

### Lab objectives

- 1) Understand the objects that occupy different regions of our galaxy
- 2) Locate galaxies beyond the Milky Way and identify galaxy types

### Setup

This lab will be performed in the Stellarium (version 0.15.1 or newer) planetarium program. You can access the Stellarium Planetarium program on specific computers at the following computer labs

- OC Bremerton: ST 122 Computers: 1-4
- OC Poulsbo: OCP 106 Computers: 11-13
- OC Shelton: OCS PA2 Computers: 1-2

or you can download a free copy at <http://www.stellarium.org/> (Windows, Mac OS and Linux versions of the program are available). Instructions for installing the program and system requirements can be found in the user's guide. Stellarium may not run properly on Windows Vista. If you encounter some problems, try downloading a different version of Stellarium by clicking on the "**older releases**" link. You can access the user's guide from the link on the Stellarium homepage.

### 1) The Milky Way galaxy

1a) Set the location to Seattle. Remove the landscape and the blue sky by toggling **off** both the *Ground* Icon and the *Atmosphere* Icon on the *Main-Toolbar*. Find the Milky Way and list the constellations that are project through the mid-plane of our galaxy. To draw the mid-plane, click on the '*Sky and viewing options*' Icon on the *Left-Toolbar*. Select the 'Markings' tab at the top of the *View popup window* and then click on the "Galactic Equator" to draw the mid-plane of the galaxy. Next, select the 'Starlore' tab at the top of the View popup window and then click on the "Show boundaries" to draw the constellation boundaries. List all of the constellations that pass through the Galactic Equator by starting with Canis Major and then continue in the direction of Orion, until you return to Canis Major.

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1b) Find the galactic center and list the 3 largest constellations closest to the center:

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1c) Toggle **off** both the *Constellation lines* Icon and the *Constellation labels* Icons. Toggle **on** the *Deep-sky objects* Icon. Which region of the sky contains most of the deep-sky objects? (Hint: zoom out to get a better view of the entire sky). \_\_\_\_\_

Explain why so many deep sky objects are found along that region: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

1d) Find objects with the yellow ⊕. This symbol identifies: \_\_\_\_\_

1e) Where do you find the highest concentration of yellow ⊕ : \_\_\_\_\_

Explain why so many are concentrated around that region: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## 2) Galaxies beyond the Milky Way

2a) Find objects with the red, orange and blue ovals symbols. ○

The red ovals identify: \_\_\_\_\_

The orange ovals identify: \_\_\_\_\_

The blue ovals identify: \_\_\_\_\_

2b) Where do you find the highest concentration of ovals?

In the constellations: \_\_\_\_\_

(Hint: search the constellations of the zodiac, found along the Ecliptic (the Ecliptic line can be drawn the same way the Galactic Equator is drawn). You have found the 2 constellations when you see over a thousand ovals when zoomed into that patch of sky.)

Explain why so many galaxies are concentrated around that patch: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2c) Complete the galaxy table below. To find these galaxies, you can use the *Search Window* by clicking on the *Search* icon on the *Left-Toolbar*.

Galaxy	Common Name	Galaxy Type	Constellation	Additional Questions
M33	Triangulum	S	Triangulum	-----
M31				The dark lanes are made of:
M32	-----			M32 is a satellite galaxy of:
M110	-----			M110 is a satellite galaxy of:
M51			Canes Venatici	The red patches are:
NGC 5195	-----			NGC5195 is _____ with M51
M81				The blue dots are:
M82				The red filaments are:
M109				The center has a _____ shape

You can use the following galaxy type abbreviations:

**S** – Spiral, **SB** – Barred Spiral, **E** – Elliptical, **I** – Irregular