

## 20. The Milky Way: Our Galaxy

### **20.1. *Our Place in the Milky Way***

20.1.1. Historically, what observations were made that revealed our position in the Milky Way Galaxy?

20.1.2. What observations can be made to quantify the velocity of the Earth in the Milky Way Galaxy?

20.1.3. How much material is there in the Milky Way Galaxy?

20.1.4. What is the general flow of stars through the Milky Way disk?

20.1.5. What is dark matter and how does it fit into the general picture of the Milky Way?

20.1.6. What is a “high-velocity” star?

### **20.2. *Interstellar Gas and Dust***

20.2.1. How do we know that interstellar dust exists in the disk of the Milky Way? How does this dust effect the starlight that passes through it?

20.2.2. How do we know that interstellar gas exists in the disk of the Milky Way? How does one go about observing it?

### **20.3. *The Structure of the Milky Way System***

20.3.1. What are some typical “tracers” that can be used to map out the spiral structure of the Galactic disk?

20.3.2. What are some theories that explain where the spiral structure comes from?

20.3.3. Describe the Galactic halo and the nuclear bulge.

20.3.4. What do astronomers believe is lurking in the center of our galaxy?

20.3.5. Describe the differences between population I and population II stars.

### **20.4. *The Formation and Evolution of the Galaxy***

20.4.1. List the series of steps in the model that describes the formation of the Milky Way and the evidence to support each step.

**20.5. The Galactic Magnetic Field (Not on the Test)****20.6. Cosmic Rays (Not on the Test)****Test Yourself . . .**

Chapter Summary: Read it. If you find any part to be confusing and/or not explained within the Chapter, ask your instructor for help at the next class meeting or during office hours. When you read the Chapter Summary I would like you to picture yourself explaining the content of the Chapter to someone else in your own words while using the Summary only as a prompt. If you find that you stumble along, pause to refer back to the Chapter, or merely repeat the Chapter Summary verbatim, then you should consider that to be a sign that you have not learned the content of the Chapter.

Inquiries: 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22

Summary Questions: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14

Applying your Knowledge: 1, 2, 3, 5, 6