Galaxies ASTR421
Prof. Richard Mushotzky Fall 2012

Homework 3
Due Oct 11

1. *S&G Problem 2.8*

The surface brightness is as seen by an external observer located far from the disk perpendicular to the suns position (e.g. ignore galactic reddening). [10 marks]

2. *S&G Problem 2.13*

“Uniform sphere of stars” means a constant density sphere of stars. For the IMF (eq 2.5) the problem asks you to consider the case for which there are no stars below 0.2 solar masses. The last section (it says 'for advanced students') is for extra credit. [20 + 5 marks]

3. *S&G Problem 2.20* [15 marks]

4. *S&G Problem 3.19*

Comment on the physical significance of the result. Does it make sense? [15 marks]

5. *Obtaining the Initial Mass Function*

Write an essay about the IMF. What are the observational and theoretical difficulties in determining the IMF, and how does one go about trying to resolve them? Include discussion of converting light to mass (and uncertainties), effects of age and distance, etc. [15 marks]

6. *A dusty question*

Write an essay answering the following questions. Why does a fair fraction of a galaxy’s luminosity appear in the IR? What is the source of IR photons? What does this tell us about star formation? Extra credit: why is observing in the far IR exciting/important for galaxy evolution studies? [15 + 5 marks]