Astronomy 330 / Galaxies

Problem Set 1
Due: Friday 17 September 2010

Problem 1. (10 points) Take your galaxy from the "Adopt-a-Galaxy" list. What is its:

a) Hubble type;
b) distance;
c) diameter (in kpc);
d) optical luminosity (L_0); and,
e) 1.4 GHz flux (in Jy).

One possible source of information could be the NASA Extragalactic Database (http://nedwww.ipac.caltech.edu).

f) Write a paragraph describing why this particular galaxy might be of interest to the broader astronomical community. Include at least three references.

Problem 2. (20 points) For an introduction on galaxies and the Sloan Digital Sky Survey, do the "Galaxies" project on the SDSS webpage

http://cas.sdss.org/dr5/en/proj/advanced/galaxies

up to the part on galaxy collisions. (We will come back to colliding galaxies later in the course). This is a straightforward exercise, and a good way to get started thinking about the variety of galaxy types, and what "type" means in this context. For the initial classification part, talk with your classmates and compare classifications. As part of Question 10, attempt to come up with a quantitative classification scheme based on the spectra of the individual galaxies.

Problem 3. (20 points) Do the "Hubble Diagram" project on the SDSS web page. Again, this is straightforward, but a nice introduction to some of the astrophysics used during the semester.