

ASTR 511: LABORATORY II
INTERACTIVE COMPUTING AND IMAGE PROCESSING

DUE WEDNESDAY OCTOBER 15

In this Lab, you will learn the basics of interactive computing and 2D digital image processing using IDL and will apply simple manipulation and measurement procedures to a sample set of CCD imaging data.

The Lab will be performed in the framework of the ASTR 511 "IDL Tutorial," which is linked to the course home page.

In preparation for the Lab, you should do the following:

- (a) Read the home page of the IDL Tutorial.
- (b) Read sections I.1, I.2, I.3, and II.1 of the *ASTR 511 Guide to IDL for Astronomers*, which is linked to the Tutorial home page. Refer to the Guide as needed during your work on the Laboratory.
- (c) Peruse as much of the supplied introductory literature on IDL as you wish. From any UNIX terminal in the department, you should be able to bring up PDF versions of the IDL manuals by simply typing `idlman` at the UNIX prompt.
- (d) Obtain a copy of the "IDL Handguide." Photocopies were made for the class. This contains a brief, one-line description of each intrinsic IDL command.
- (e) Do the first two parts of the IDL Tutorial, "IDL Exercises I" and "II." Do as many of the tasks in those parts as you think you need to prepare for part III. You are not expected to turn in journal files or hardcopies from these parts.

Lab II consists of the third part of the IDL Tutorial, "IDL Exercises III: Image Processing." You should do all sections of III.

What you should turn in from Exercises III:

- (1) An edited and annotated journal file. If you do the lab in more than one session, combine the files together.
 - Edit out errors and clutter in the file. Annotate it for clarity.
 - Clearly demarcate and title each part of the Exercises.
 - Clearly highlight in some way specific answers you are asked for in the Exercises.
 - Name the file "Lab2-answers.jnl." Put it in the `astr511` subdirectory under your home directory.
 - Also submit a hardcopy of the file. (The UNIX routine `enscript` does a good job of formatting an ASCII file for printing.)
- (2) A hardcopy of each image/diagram you are asked to print out in the course of Exercises III. Be sure each such figure has an explanatory title and properly labeled axes (if appropriate).

You can consult one another while working on the Lab, but the sessions producing journal files and hardcopies should be entirely your own work.

Let me know of any difficulties with the software or data sets.