

Lab 11 - Applications of Diffraction Grating Spectra

Purpose

In Lab 11 we explore fainter stars and objects using the 200 lines/mm diffraction grating filter installed in the ST-10 / TEC140 setup. Targets may include special objects of interest like Wolf-Rayet stars, carbon stars, or galaxies and bright comets. Basic procedures for taking diffraction grating spectra are the same as ASTR 203 p.41-42, including focus and autoguiding.

Procedure

1) Choose 3-5 stars of a specific spectral type (i.e. Be stars). Gather data of each star and process in RSpec (Lab 12). Notice any differences or similarities among your target stars, and determine their causes. Specific targets will be provided.

2) Gather data of several bright galaxies as possible, and process in RSpec (Lab12). Observe any strong features or regions in the spectra, and any noticeable variations between galaxy types. Specific targets will be provided.

3) Optionally, take spectra of bright comets or gas giant planets as available, and look for and identify any distinct features in the spectrum. During imaging, use the subframe function in CCDSoft to determine the best exposure times for these fainter objects.

The wavelength range available with the RO 200 line diffraction grating is ~ 5400 – 6700 angstroms. This may include hydrogen, sodium, or helium lines.

As seen in ASTR 203 Lab12 p.43-46, expansion rates of some Type 1a supernovae can be measured and tracked in RSpec using diffraction grating spectra.

The latest Type 1a events can be found here:

<http://www.rochesterastronomy.org/supernova.html>

You can also follow current supernovae at The Astronomer's Telegram site.

<http://www.astronomerstelegam.org>