Astro Excelets: Interactive Excel Spreadsheets for Introductory Astronomy

These interactive animated spreadsheets (aka - simulations) are used in introductory astronomy lectures and laboratories. Through the use of numerical experimentation and "what if" scenarios, we have a powerful discovery learning tool for students using readily available off-the-shelf software.

Atomic Spectroscopy

ASP 2012 Paper in Proceedings - click here (pdf)

Laboratory activity using gas discharge tubes and diffraction glasses (pdf):

Twinkle, Twinkle, Little Star: How Astronomers Know What You Are

Interactive Excel Spreadsheets (all as xls files unless noted otherwise):

Generating Atomic Line Spectra (good for follow-up discussion after lab)

Spectroscopy in Motion: A Method to Measure Velocity (pdf activity)

Spectroscopy in Motion II: A Method for Finding Exoplanets (forthcoming pdf activity)

Atomic Spectra and Magnetic Fields: The Zeeman Effect

Emission spectra of the chemical elements on the periodic table (top of page) - WebElements

Blackbody Spectrum

Blackbody Radiation (includes estimating stellar temperature and solar spectra) **updated**

Estimating Planetary Temperatures via the Stefan-Boltzmann Law -
right click and Save Target as...

Other stuff

The Solar System - first lab intro with scaling (pdf activity)

Gnomon (shadow stick) Orbital Motion

How small an impactor can reach the surface of a planet? (pdf activity)

Classifying Stars (H-R Diagram)

Roche Limit

Exploring Kepler's Third Law

Escape Velocity

The Expanding Universe

Exploring the Drake Equation (Google Sheets)
(in Google Sheets, go to File > Make a copy... to have an interactive spreadsheet)

Building a Multivariable Model for Planetary Temperature and Examining the Error
(Google Sheets) Scaffolding to improve a mathematical model - **NEW**

Exploring the Behavior of Main Sequence Stars (Google Sheets) Takes a data analysis tour of variables considered for main sequence stars **NEW**

The Faint Young Sun Problem (Google Sheets) **NEW**

The Origin and Abundance of the Chemical Elements (Google Sheets) **NEW**

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