

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**

[The Faint Young Sun Problem](#) (Google Sheets) **NEW**

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