

Astronomy 112

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Course Info

- read **course outline**: <http://wordpress.viu.ca/arkosg>

Notes, Labs, Quizzes

- (*incomplete*) **notes** posted *online*
- **labs** start next week (*bi-weekly*)
- on the **website**; *fill-in* format; **NO** lates
- **NO** deferred quizzes (*best 5 of 6*)
- there is **NO** "make-up" work, extra work, etc.

Observing Project

- *includes* outdoor observations, independent work
- *detailed guidelines* & *due date* on **website**
- **NO** lates

Doing well

- *come to class* & *participate*
- *don't leave observing project* to the last minute
- *study, see me when you have Q's!*

ASTR 112

Introductory Astronomy: Stars & Galaxies



Course Overview



- Introduction
- Navigating the Sky
- Light, Atoms, Spectra
- Telescopes
- Sun
- Stars
- Galaxies

CLICKER: In which topic are you *most* interested?

- (a) *the Sun*
- (b) *telescopes*
- (c) *stars*
- (d) *galaxies*

Scientific Notation & Metric Prefixes

- sci notation is a number times a *power of ten* (10)

(eg) $2.5 \times 10^4 = 25,000$, $6.32 \times 10^{-2} = 0.0632$

giga (G) - one billion
mega (M) - one million
kilo (k) - one thousand
micro (μ) - one millionth
nano (n) - one billionth

Astronomical Distances

- **astronomical unit** (AU) $\sim 1.5 \times 10^8$ km
- *average* distance between *centers* of Earth & Sun
- **light year** (ly) $\sim 10^{13}$ km (*ten trillion* km)
- *distance* light travels in *one year* (in a **vacuum**)
- **parsec** (pc) = 3.26 ly

Angular Measurement

- there are 360 **degrees** ($^\circ$) in a circle
- 1 **degree** is divided into **60 arcminutes** (**arcmin** or $'$)
- 1 **arcmin** is divided into **60 arcseconds** (**arcsec** or $''$)

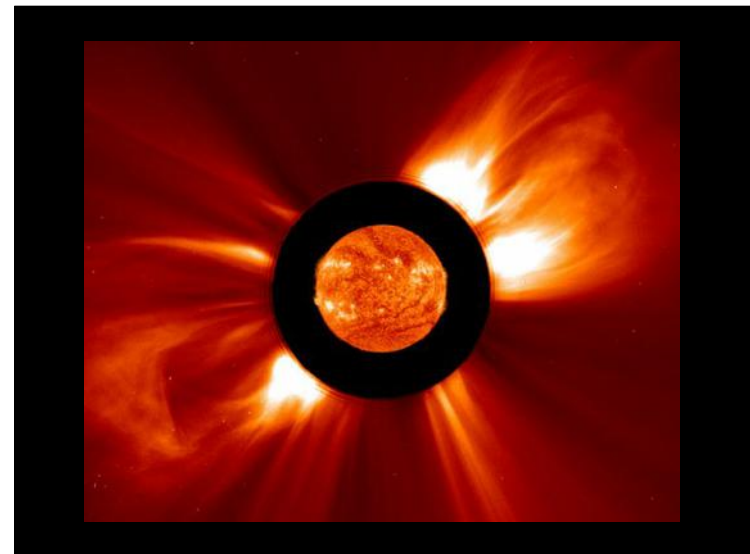
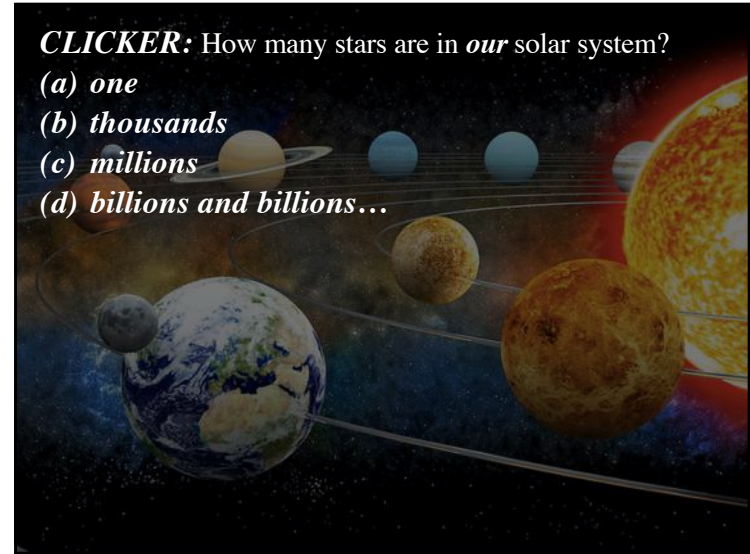
Science

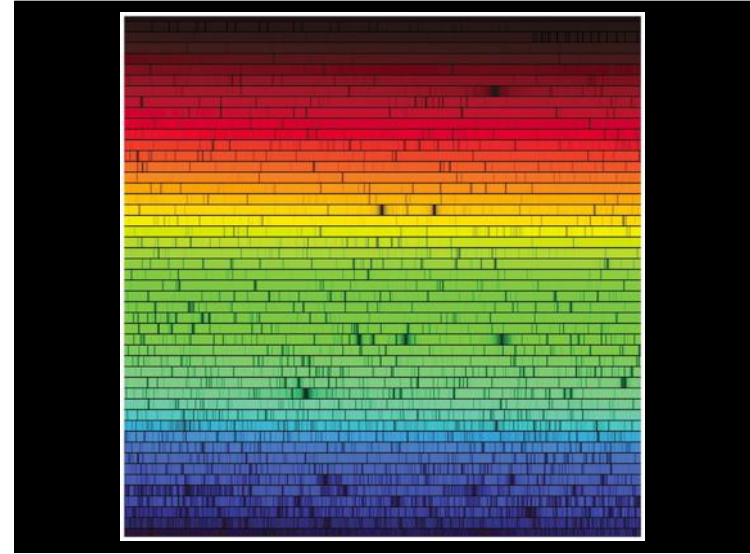
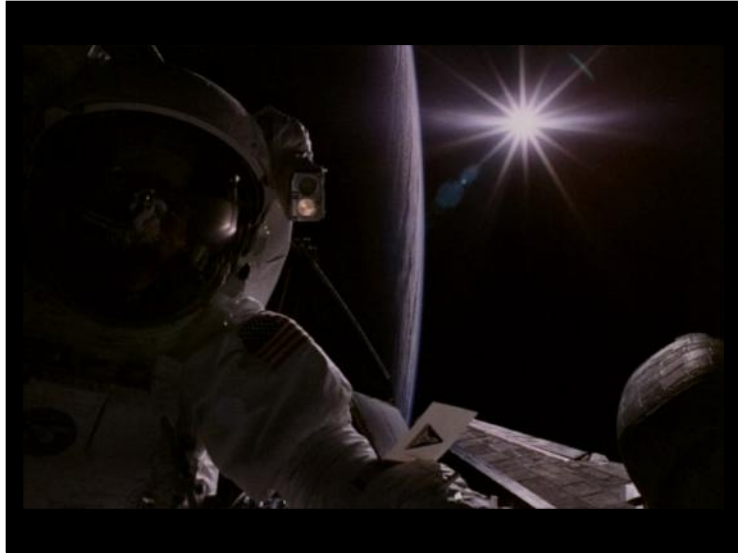
- astronomy is a **science**
- **science** relies on the **scientific method**:
 - **predict** (hypothesis or model)
 - **observe** (or experiment)
 - **accept, modify** or **reject**
- **iff** ideas pass enough testing → **Law** or **Theory**

Q: Can we ever prove that an idea is 100% correct?

CLICKER: How many stars are in *our* solar system?

- (a) *one*
- (b) *thousands*
- (c) *millions*
- (d) *billions and billions...*

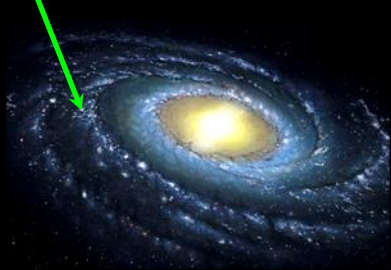








Milky Way
 You are (100+ billion stars; 150,000 ly wide)
 here!




• to count all stars in Milky Way: ~ 3000 years



