

Introductory Astronomy

Week 4: Stars

Clip 1: Introduction

Plan

- Stars are **Suns** so start by learning what we can about our local star
- To compare to other stars, need to find **luminosity, temperature, size, and mass**
- Combine **statistics** with stellar **models** to understand how stars work

The Sun Shines – but How?

- Sun is **big** and **hot** so **luminous** $L_{\odot} = 3.83 \times 10^{26} \text{ W}$
- How does it **stay** hot?
- **Chemical** (rearrange **electrons** - electromagnetic) burning produces 10^{-19} J per atom, or $6 \times 10^7 \text{ J}$ per kg.
- Need to burn $6.4 \times 10^{18} \text{ kg/s}$ so run out in 10^4 y
- **Kelvin-Helmholtz** (gravitational) energy would last 10^7 y

Credits

- Sky Simulation: Starry Night
<http://www.starrynight.com/>