



Canada-France-Hawaii Telescope
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Middle and High School Visit Topics

Our Solar System:

- Comparative Planetology (8-12)
- The Moon (8-12)
- Building a Solar System (8-12, Physics)

Biology

- Aliens and Adaptations (7-12, Biology)

Stars:

- Fusion & Stars (9-12, Chemistry)
- Why are stars different colors? (8-12, Chemistry, Physics)
- Stellar Lifecycles (9-12)

Light & Optics:

- Laser Jello Optics (9-12, Physics)
- Studying Spectra (9-12, Chemistry)
- How a telescope works (9-12, Physics)
- The Electromagnetic Spectrum & You (9-12, Physics)

Misc Topics:

- Universe Exploration (8-12)
- Black Holes and relativity (9-12, Physics)
- Calendars (8-12)
- Careers (7-12)

Comparative Planetology (8-12)

This talk is a more advance look at planets focusing on the characteristics and movement patterns of the planets in our solar system. Student will classify the planets by their characteristics and learn how astronomers define a planet.

The Moon (8-12)

This talk explains the phases of the moon, eclipses, and the tides, specifically focusing on the predictable nature of all three. A comparison of the gravity of the earth, moon and sun will also be given.

Building a Solar System (8-12, Physics)

Planet formation is a very hot topic in astronomy. Uncover the latest theories in how our solar system formed and how the discovery of exoplanets caused astronomers to reevaluate their ideas. For Physics students, the talk will emphasize the role conservation laws (energy & momentum) play in planet formation.

Aliens and Adaptations (7-12, Biology)

One example of how astronomers have discovered using telescopes is exoplanets or planets outside of our solar system. The talk focuses on how exoplanets are discovered, where life may be found and how that life would differ from life on Earth. For life science students, the talk will focus more on evolution and natural selection in different environments on earth and extrapolate that to potential alien life.

Fusion & Stars (8-12, Chemistry)

Stars are powered by fusion. But what is fusion and how does it create enough energy to power a star? Students will learn how to apply one of the most famous equations, $E=mc^2$, to answer that question.

Why are stars different colors? (8-12, Chemistry, Physics)

This talk explains how the temperature of a star affects its life and color, energy transformations, energy transfer within stars. For physics students, the talk will focus more on the connection between temperature and wavelength and the electromagnetic spectrum. For chemistry students, how astronomers determine the composition of different stars using spectra.

Stellar Lifecycles (9-12)

The life of a star is predetermined by its mass from formation. This talk describes the physical and nuclear dynamics involved in the life cycle of a star, how stars form and their ultimate fate.

Laser Jello Optics (8-12, Physics)

How do astronomers use light to study the stars? Why are they interested in some colors but not others? This talk is an introduction to the electromagnetic spectrum and optics. Students will learn terms like absorption, transmission and how light changes when it interacts with an object. For physics students, the focus will be on prediction behavior of the optical system.

Studying Spectra (9-12, Chemistry)

Astronomers only have the light from objects to understand every characteristic of the object. Spectra are a valuable tool for astronomers. Students will make their own small spectrographs and learn how the rainbow from a star reveals information about the star. For chemistry students, the focus will be on how spectral lines are formed as a result of transitions of electrons.

How a telescope works (9-12, Physics)

An introduction to how telescopes and their cameras work. The Canada- France- Hawaii Telescope will be used as an example, as well as telescopes operating different wavelengths along the electromagnetic spectrum.

The Electromagnetic Spectrum & You (9-12, Physics)

From radio to gamma rays, the electromagnetic spectrum is all around and provides different insights into the universe. This talk focuses on how astronomers use different parts of the spectrum and everyday examples of the EM spectrum.

Universe Exploration (8-12)

What is the most common element in the universe? What are some of the components of the universe? How did it form? This talk answers these questions and more about the universe we live in and what it contains.

Black Holes and relativity (9-12, Physics)

How do you see a black hole? How do they form? Do we know where any are? What happens when you fall into a black hole? These most common questions about black holes will provide the basis for this talk. For physics students, black holes will provide an entry point into a larger discussion about relativity.

Careers (7-12)

An overview of the different jobs at an observatory including the educational background needed to work in different fields.

Calendars (7-12)

The sky was the basis for most early calendars. Students will learn that the moon and its phases was the basis for many calendars, including the Hawaiian calendar. Based on time, the talk will expand on lunar calendars, looking at how the seasonal motion of the sky influenced the start of the new year for several cultures.

To schedule a classroom visit or for more information (including grade level specific standards covered for each talk), please contact Mary Beth Laychak at laychak@cfht.hawaii.edu or 885-3121. Topics outside this menu are available upon discussion.