

OPTICAL SCIENCE WITH DR. PETER WIZINOWICH

TALKING POINTS

KNOWLEDGE:

1. Who reportedly patented the world's first telescope in 1608?
2. How much could the device magnify an image? How much could Galileo's similar device magnify an image?

COMPREHENSION:

3. Why are the observations of telescopes on Earth sometimes limited?
4. What is the technology that helps overcome these limitations called?

APPLICATION:

5. How can telescopes view the skies in unimpeded ways? Where is Peter adding these new capabilities?

ANALYSIS:

6. What has Peter's work enabled? Can you name some things that have been observed using the improvements Peter has made?
7. Can you think of some reasons it is important to be able to make more detailed observations of the universe?

EVALUATION:

8. Peter works hard to ensure more women and underrepresented minorities are included in the field. Why do you think this is important?

ACTIVITIES YOU CAN DO AT HOME OR IN THE CLASSROOM

LEARN MORE ABOUT W. M. KECK OBSERVATORY

W. M. Keck Observatory has its own website where you can learn more about its twin telescopes, which are among the largest, most scientifically productive optical/infrared telescopes in the world: <https://www.keckobservatory.org>

Have a look through the website, paying particular attention to this incredible story about a monster black hole that has been found in the early universe: <https://www.keckobservatory.org/poniuena>

There are also astronomy talks you can watch online via the Keck Observatory website: <https://keckobservatory.org/media/cosmic-videos>

LEARN MORE ABOUT ADAPTIVE OPTICS

To find out more about Keck All-sky Precision Adaptive optics (KAPA) visit: <https://keckao.github.io/kapa>

Peter recommends this video for an Adaptive Optics demonstration and discussion from a former member of his AO team: <https://www.youtube.com/watch?v=F6hmLcJOkzM>

There's a wealth of information about Adaptive Optics out there. Keep learning!

- Wikipedia AO page: https://en.wikipedia.org/wiki/Adaptive_optics
- Center for AO education page: https://en.wikipedia.org/wiki/Adaptive_optics
- The University of California, Los Angeles, Galactic Center Group AO page: <http://www.astro.ucla.edu/~ghezgroup/gc/ao.html>

MORE RESOURCES

Here is a brief history of the telescope from 1608 to the present day: <https://interestingengineering.com/a-brief-history-of-the-telescope-from-1608-to-gamma-rays>

Check out this INCREDIBLE site that shows the scale of the universe: <https://scaleofuniverse.com>

NASA has lots of games you can play to explore Earth and space: <https://spaceplace.nasa.gov/menu/play>