



Summary:

- Introduce the instructor
- Course outline
- What will I learn
- 5 questions astronomy can help answer

© Dimitrios Theodorakis GNU General Public License v3.0
<https://github.com/DimitriosAstro/Astronomy>



Astronomy

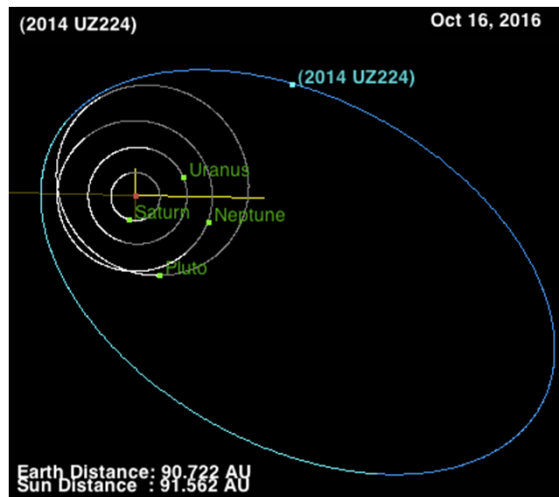
Introduction

© Dimitrios Theodorakis GNU General Public License v3.0
<https://github.com/DimitriosAstro/Astronomy>

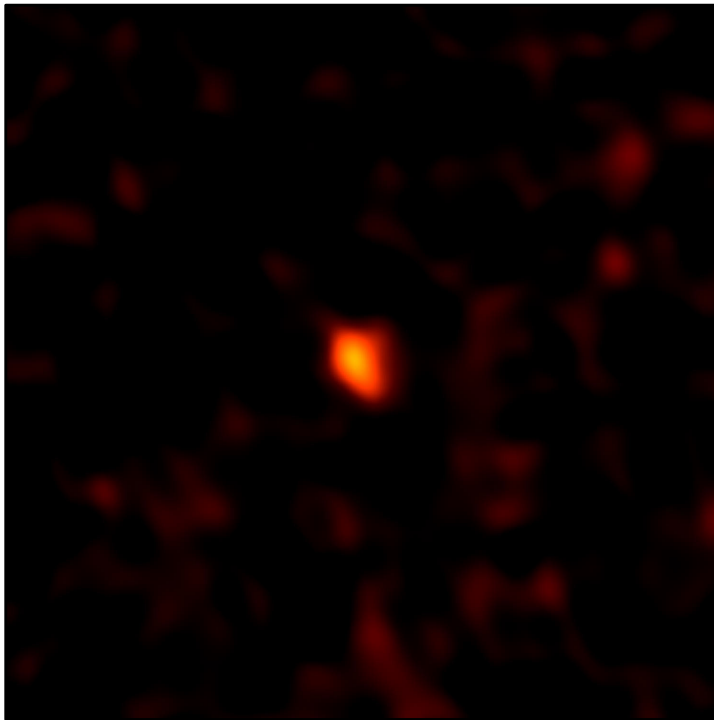
Mr Theodorakis

Astrophysics specialist

Studied asteroids and
other objects passed
Neptune
(Trans-Neptunian Objects)



Use this and the next two slides to introduce yourself as the instructor.



2014 UZ224

‘DeeDee’

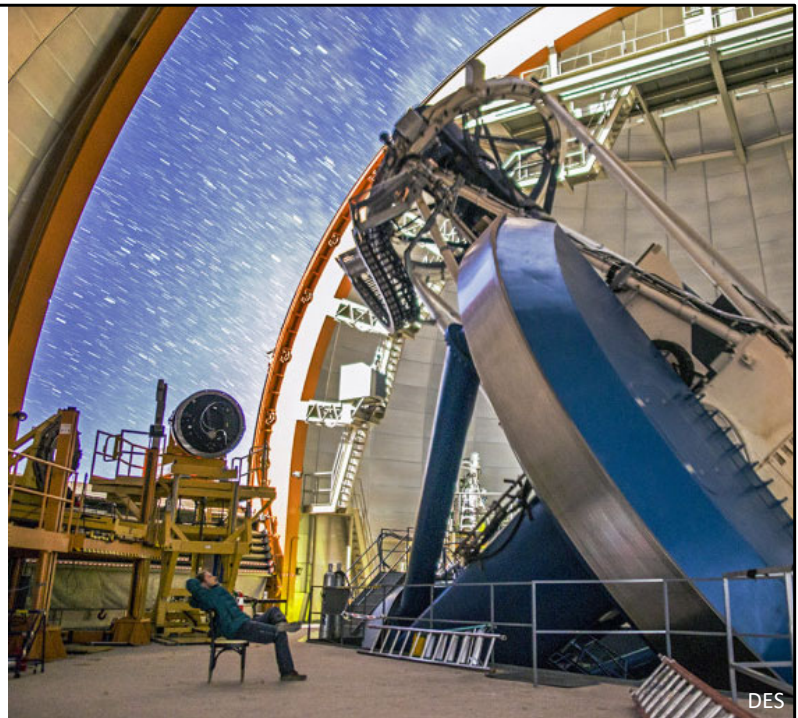
Using the Atacama
Large
Millimeter/Submilli
meter Array (ALMA)

Introduce yourself!

The Dark Energy Survey

- 525 nights over 5 years.
- 520 megapixel camera images 3 square degrees.
- Blanco 4-m telescope at the Cerro Tololo Inter-American Observatory in Chile.

Abbott. T. et. al., 2005



Introduce yourself!

Course Content:

The Solar System

- The planets
- Solar system structure
- Solar system formation

Stars

- Birth of stars
- Main sequence life
- Death of stars

Cosmology

- Hubble's law
- Birth of the universe
- Death of the universe
- Dark energy and matter

Spaceflight

- Apollo missions
- Achieving spaceflight
- Space Missions

Galaxies

- The Milky Way
- Types of galaxies

Observations

- Observing
- Image Processing
- Data Analysis

Not necessarily in that order! A brief overview of the course.

Course Outline:

A – The Solar System

- ★ Planets
- Smaller objects
- The Sun

C – Space Flight

- Spacecraft design
- Space exploration
- Spin-off technology

B – Observing the Sky ★

- Telescopes
- Day-time observing
- Night-time observing

D – Stars, Galaxies, and the end of the Universe

- Life cycle of a star
- Cosmic distances
- Evolution of the Universe

Packaged into four parts each will multiple pieces of coursework.

What will I learn?

- **Facts about the Universe!**
- **How we came to accept these facts - The Scientific Method**
- ★ • **How to make and analyse your own observations**
- **How to present your findings**

Have a think about these questions:

- Where are we?
- Who are we?
- What is around us?
- Where did we come from?
- Where are we going?

**How can Astronomy help
us answer these
questions?**

Where are we?



NASA



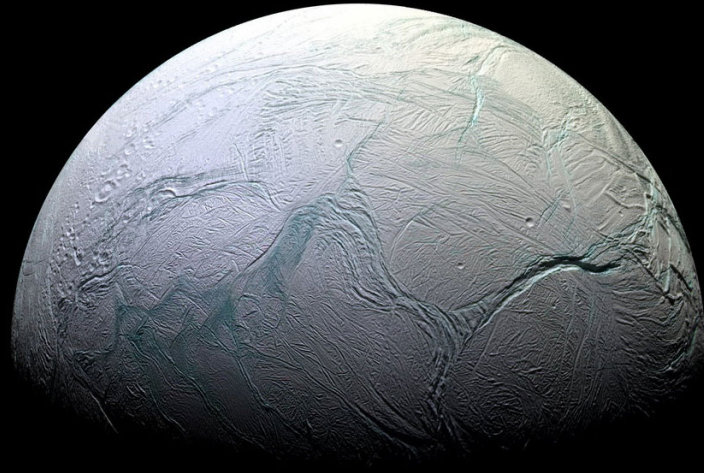
Petr Horálek

We're on Earth! But that's part of the Milky Way which is part of a larger cluster of galaxies!

Left: NASA, Blue Marble Apollo 17 (1972)

Right: Petr Horálek, Plane of the Milky Way over ESA's Paranal Observatory Chile

Who are we?

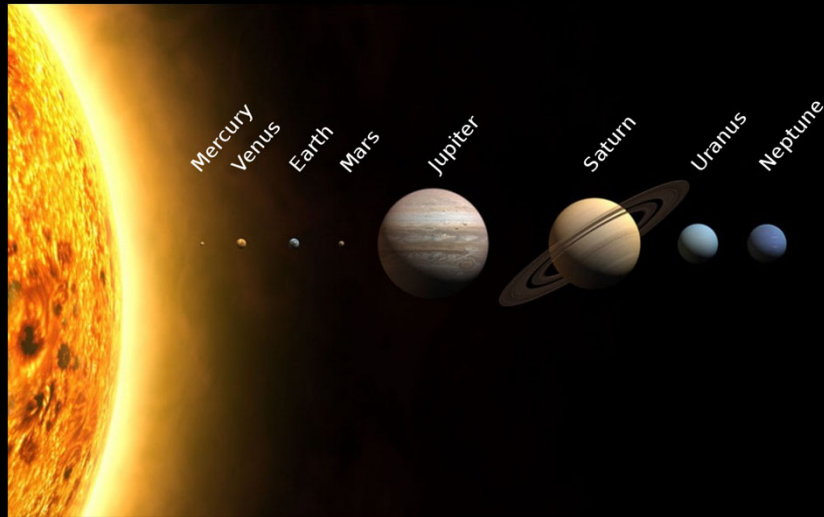


NASA/JPL-Caltech

How did life on Earth begin? Are we alone in the Universe?
Is there other life in our solar system perhaps on Enceladus, a moon of Saturn.

Enceladus, NASA/JPL-Caltech Cassini 2015

What is around us?



WP/wikimedia

The planets? The sun? What about comets, asteroids and the wonders outside the solar system?

Planets Image WP <https://commons.wikimedia.org/wiki/File:Planets2013.jpg>

Where did we come from?

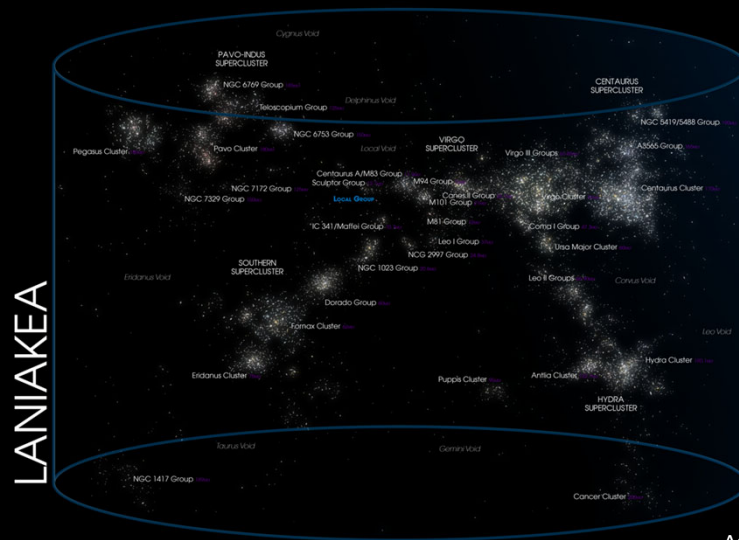


NASA/MSFC/Jacobs Technology/ESSSA/Aaron Kingery

Did life come from another place in the universe carried on a comet? (Panspermia theory)

Come Lovejoy, 2013 NASA/MSFC/Jacobs Technology/ESSSA/Aaron Kingery

Where are we going?



Andrew Z. Colvin/wikimedia

How is the Earth moving? Or the Milky Way for that matter. Or even bigger, how do clusters of galaxies move?

Perhaps we are going to Mars? It will certainly be a long time before we venture out of the solar system.

Laniakea supercluster, [https://commons.wikimedia.org/wiki/File:07-Laniakea_\(LofE07240\).png](https://commons.wikimedia.org/wiki/File:07-Laniakea_(LofE07240).png)

(The M. Way is in the Local Group highlighted in blue)

Class Materials

All materials for this course are open source and can be found at:

github.com/DimitriosAstro/Astronomy

Link to all open source materials.



Up next:

Astronomy: A History



© Dimitrios Theodorakis GNU General Public License v3.0
<https://github.com/DimitriosAstro/Astronomy>