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Kavli Institute for Cosmological Physics

29 Sept 2018

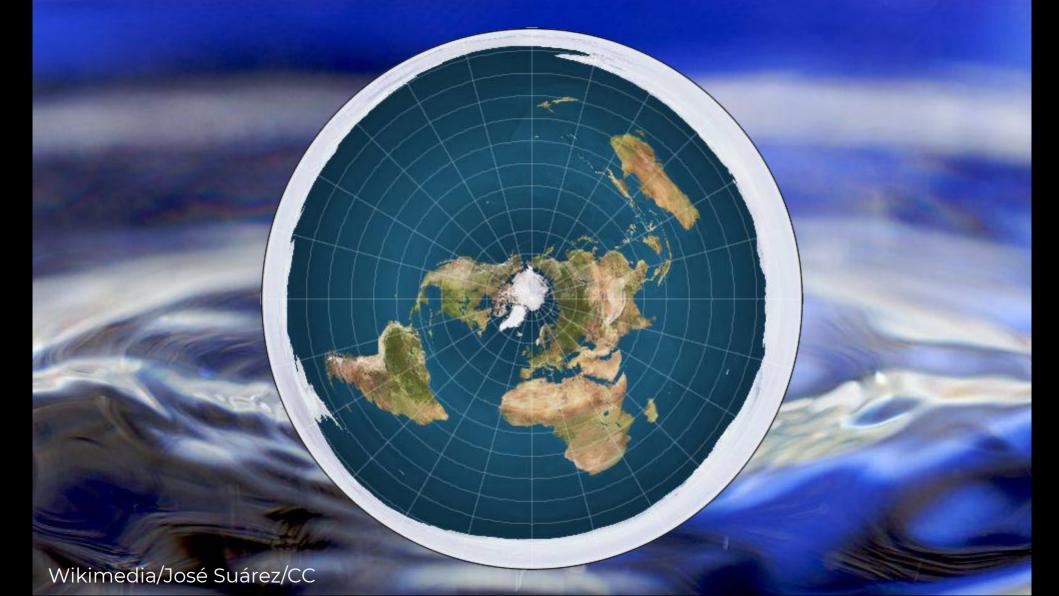
Where did we come from?: A history of cosmology from the ground

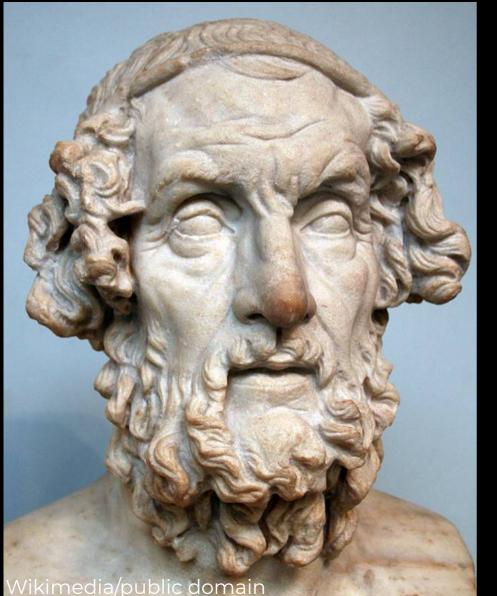
Slides, notes, schedule, etc available at this web address:

www.amylowitz.com/compton

- Where Did We Come From?: a history of cosmology from the ground
 - Pre-modern cosmological thought
 - The expanding Universe
 - The inflating Universe
 - The accelerating Universe





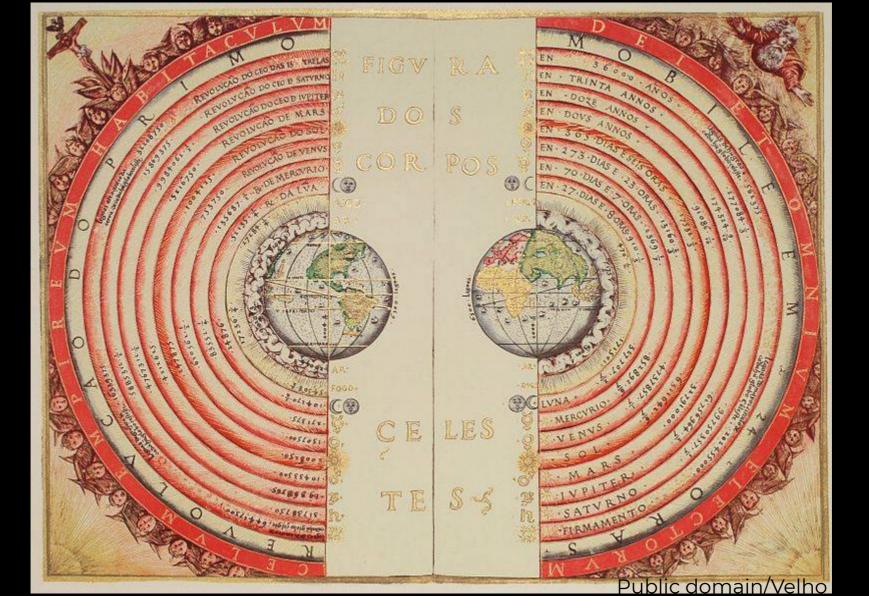


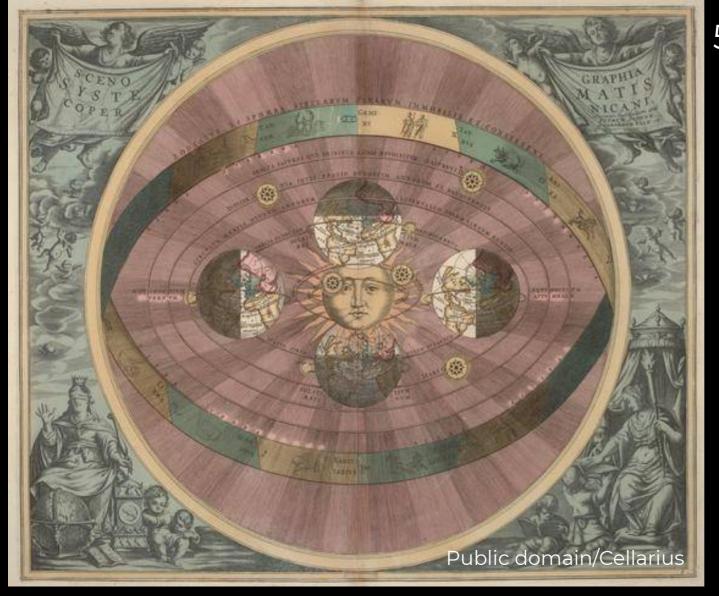
7th Century BCE: Homer



6th Century BC: Pythagoras







5th century BCE:

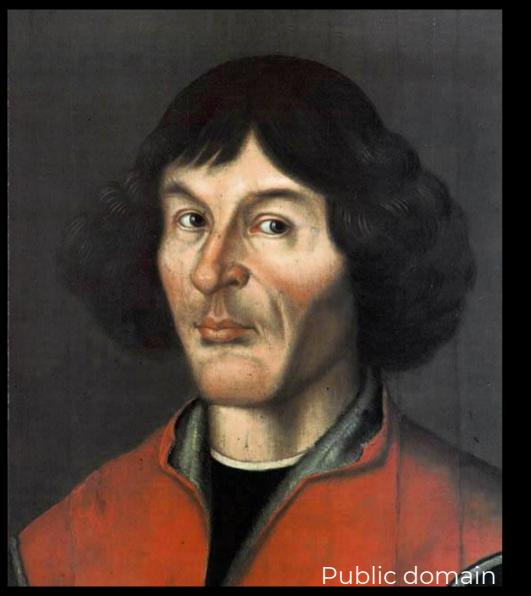
"Central fire"

Sun = star



Aristarchus of Samos

3rd century BCE



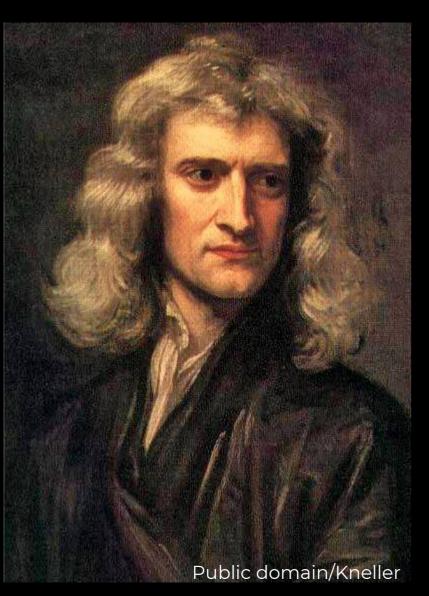
Copernican Revolution



Tycho Brahe - 1570s



Johannes Kepler



Isaac Newton

Principia Mathematica 1687

PHILOSOPHIÆ

NATURALIS

PRINCIPIA

MATHEMATICA.

Autore J. S. NEWTON, Trin. Coll. Cantab. Soc. Matheseos Professore Lucasiano, & Societatis Regalis Sodali.

IMPRIMATUR.

S. P E P Y S, Reg. Soc. P R Æ S E S. Julii 5. 1686.

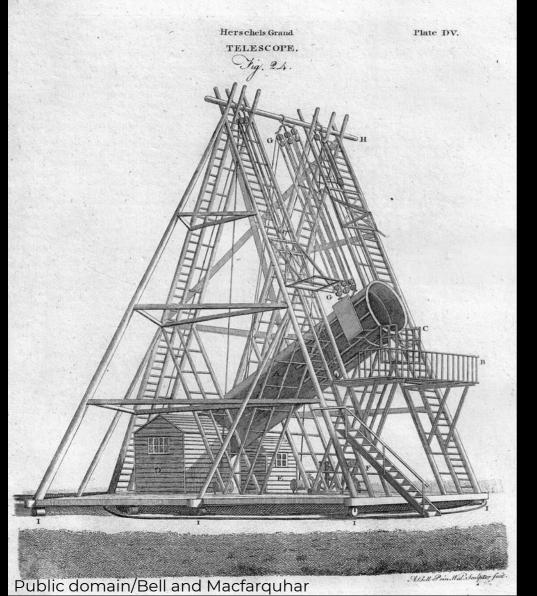
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History of the Telescope



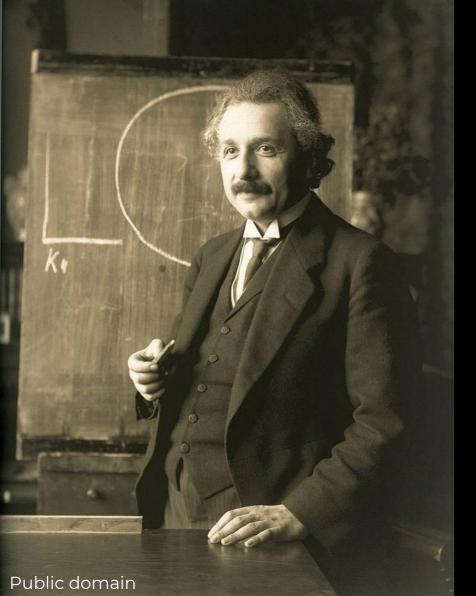
1608: Hans Lippershey



1789 "40-foot telescope"

Herschel

The Expanding Universe



Albert Einstein

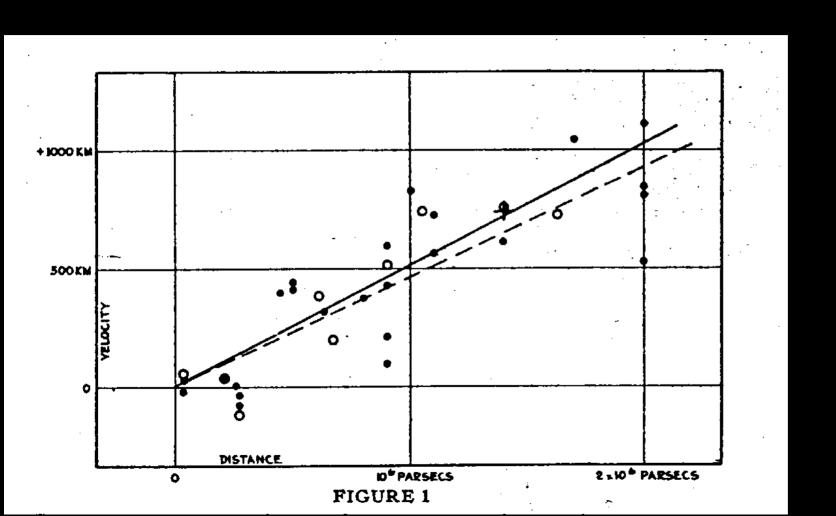
1905 – Special Relativity 1915 – General Relativity



Henrietta Levitt Annie Jump-Cannon



Edwin Hubble: 1923, 1929

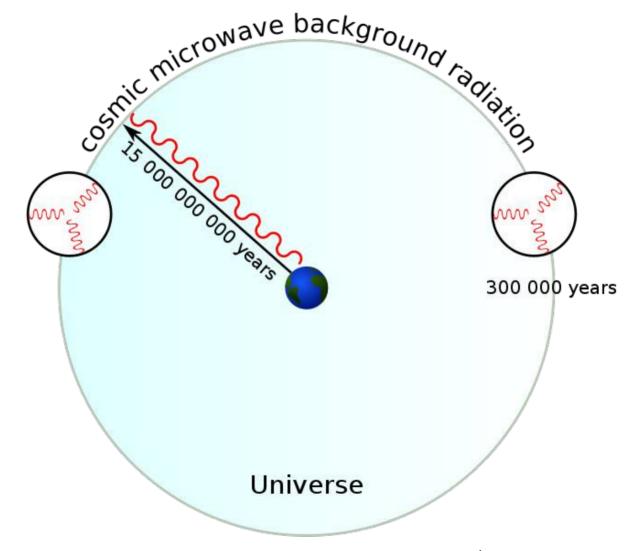


Georges Lemaître - 1927

Ralph Alpher & Robert Herman

Robert Dicke & Yakov Zel'dovich

Arno Penzias & Robert Wilson



Alan Guth

Inflation

Orders of Magnitude

How many cubic cm in an Olympic pool? about 1x109

How many cubic cm in Earth's oceans? about 1x10²⁴

How many cubic cm in the whole Earth? about 1x10²⁷

How many cubic cm in the Sun? about 1x10³³



Flatness Horizon

Next week:

Gazing Long into the Abyss: A history of light detection