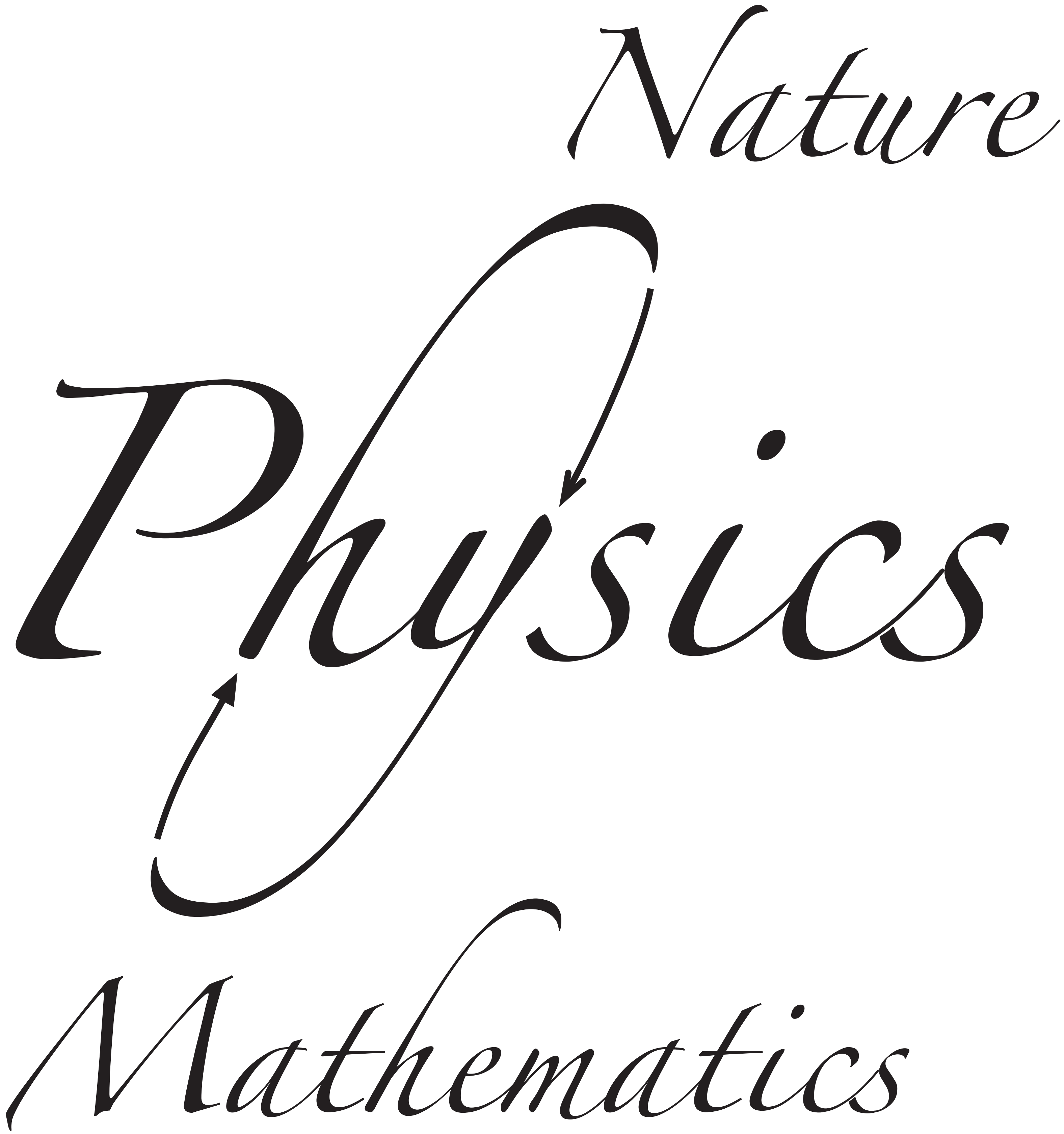
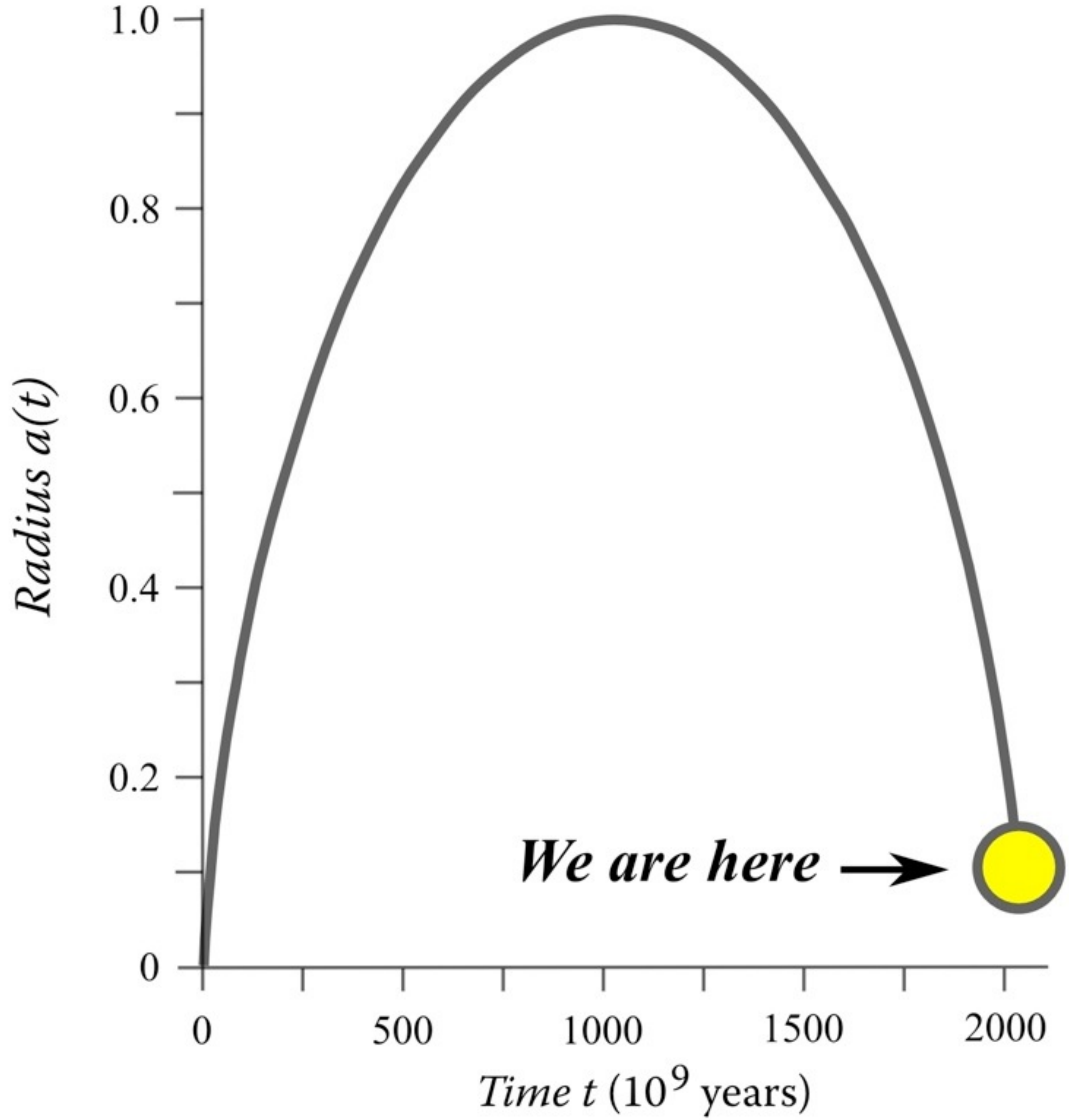
The Collapsing Universe

Understanding "accelerating redshifts" using physics from the 1920's

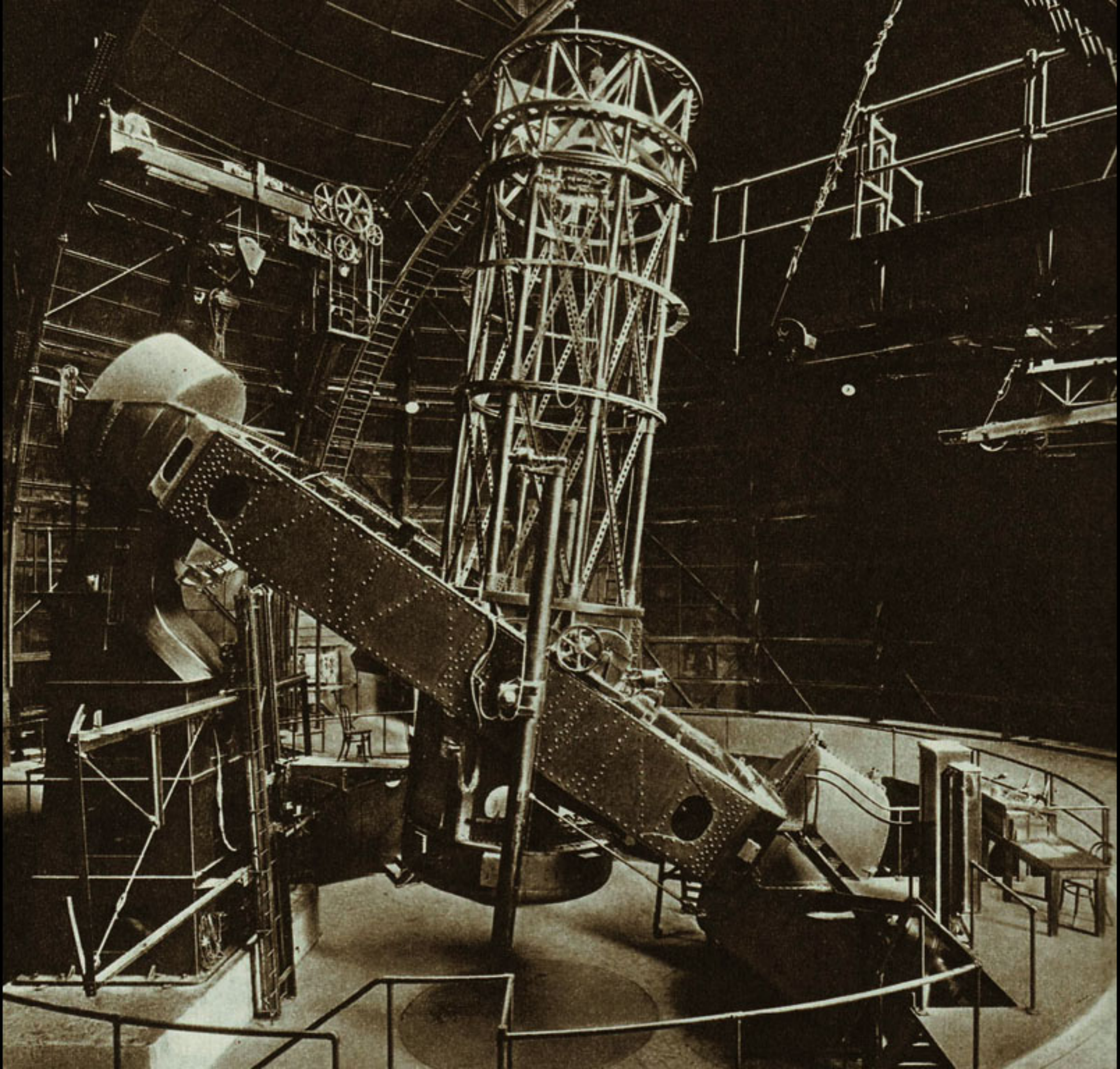
Bill Sumner

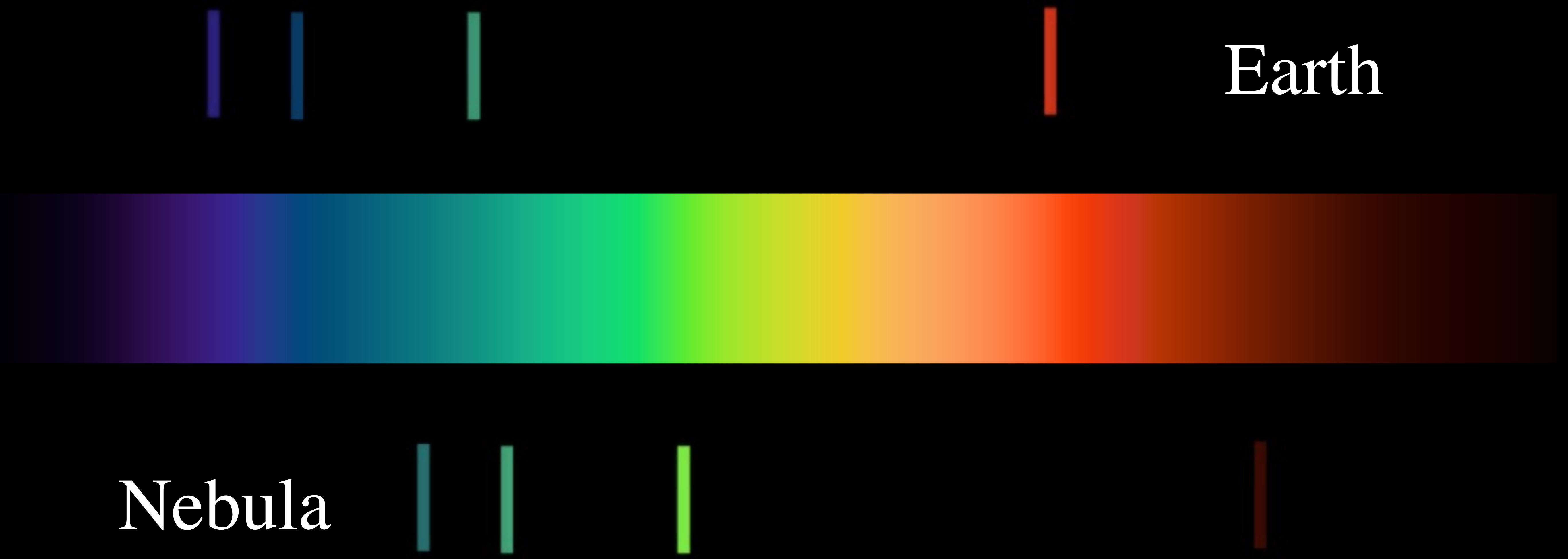
Ellensburg High School
June 2, 2014


Nature
Physics
Mathematics



Time to collapse
~9.5 billion years




Earth
Nebula

A RELATION BETWEEN DISTANCE AND RADIAL VELOCITY AMONG EXTRA-GALACTIC NEBULAE

By Edwin Hubble

Mount Wilson Observatory, Carnegie Institution of Washington

Communicated January 17, 1929

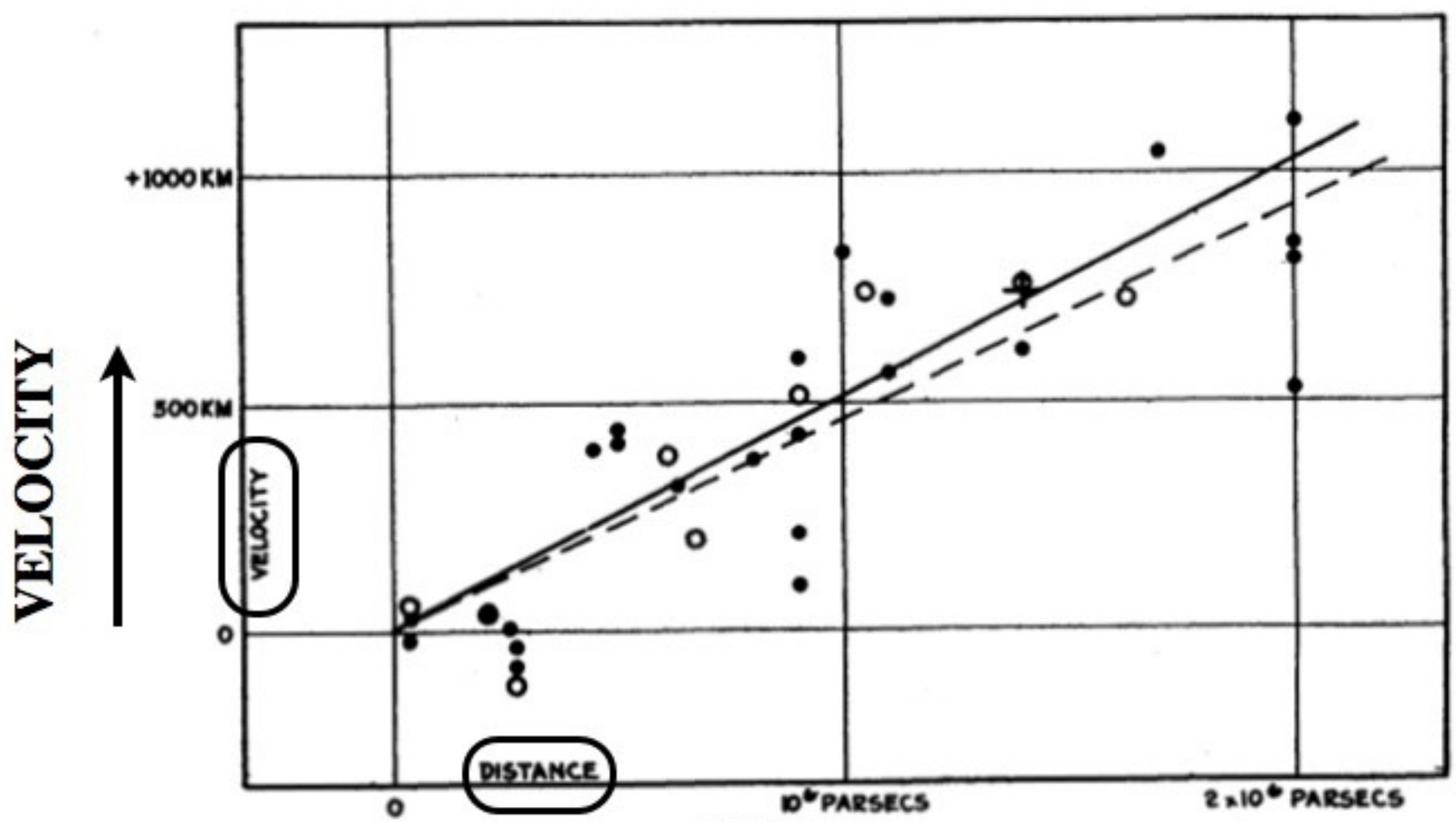
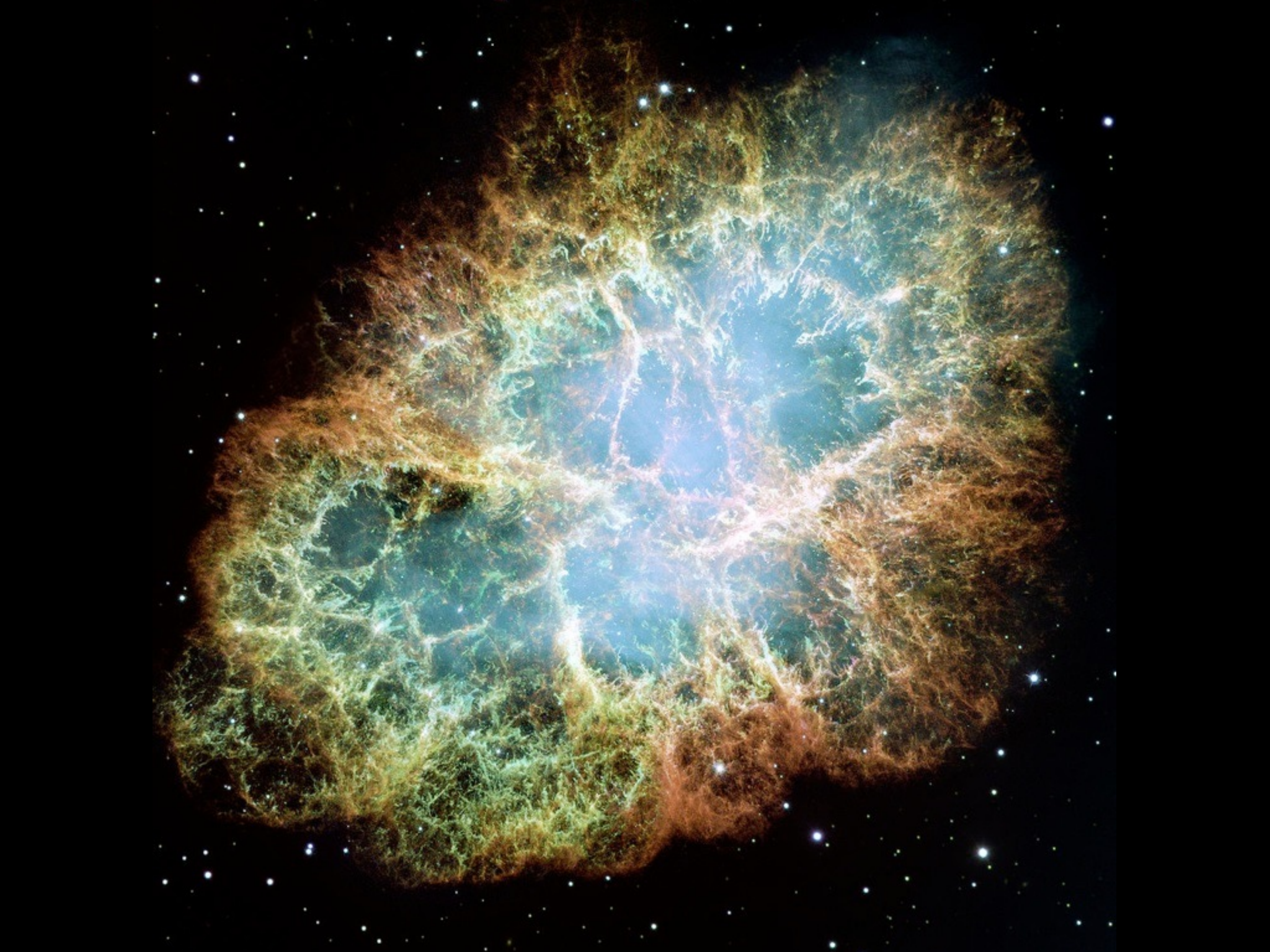


FIGURE 1

DISTANCE


SN 2011dh

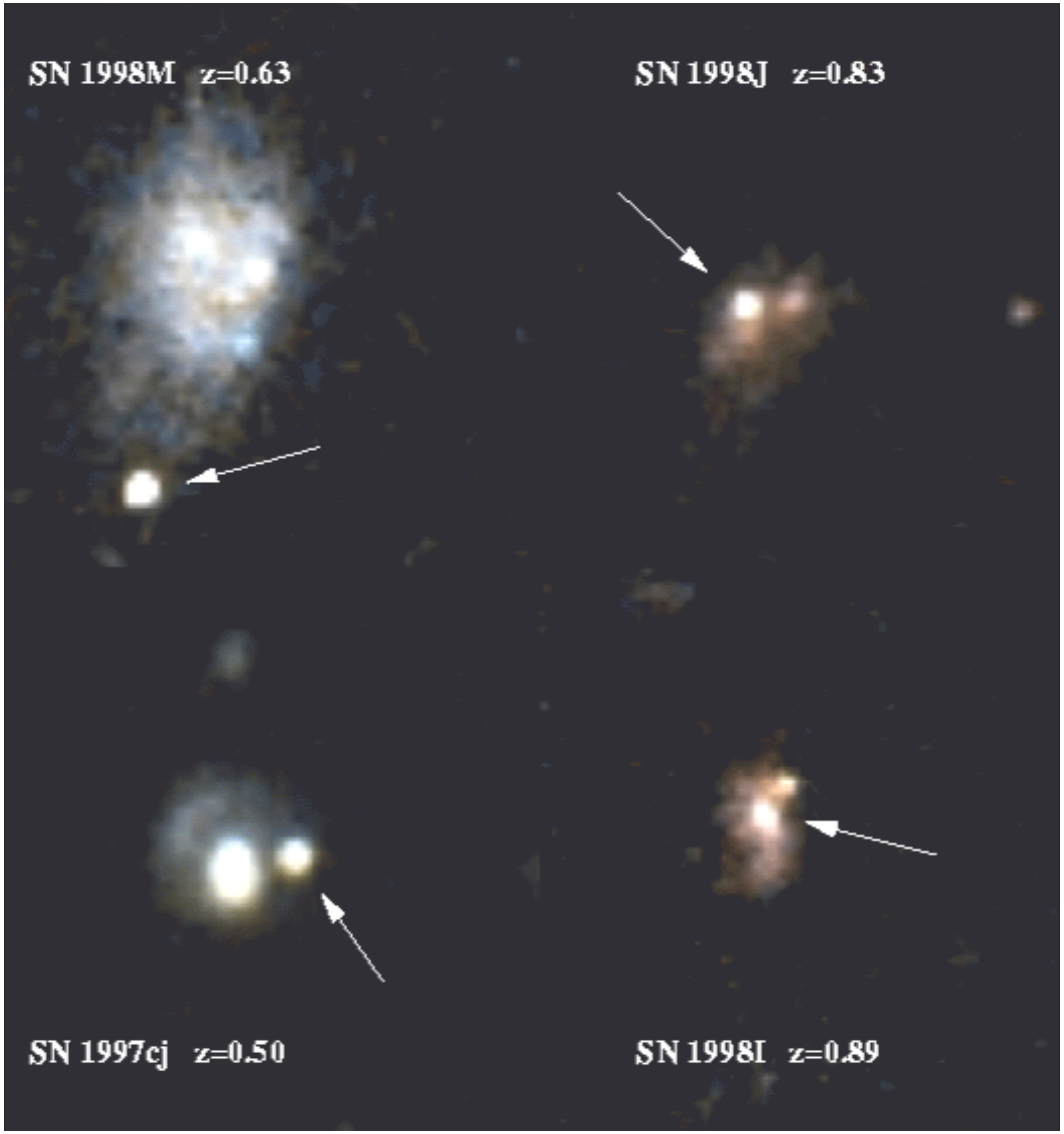


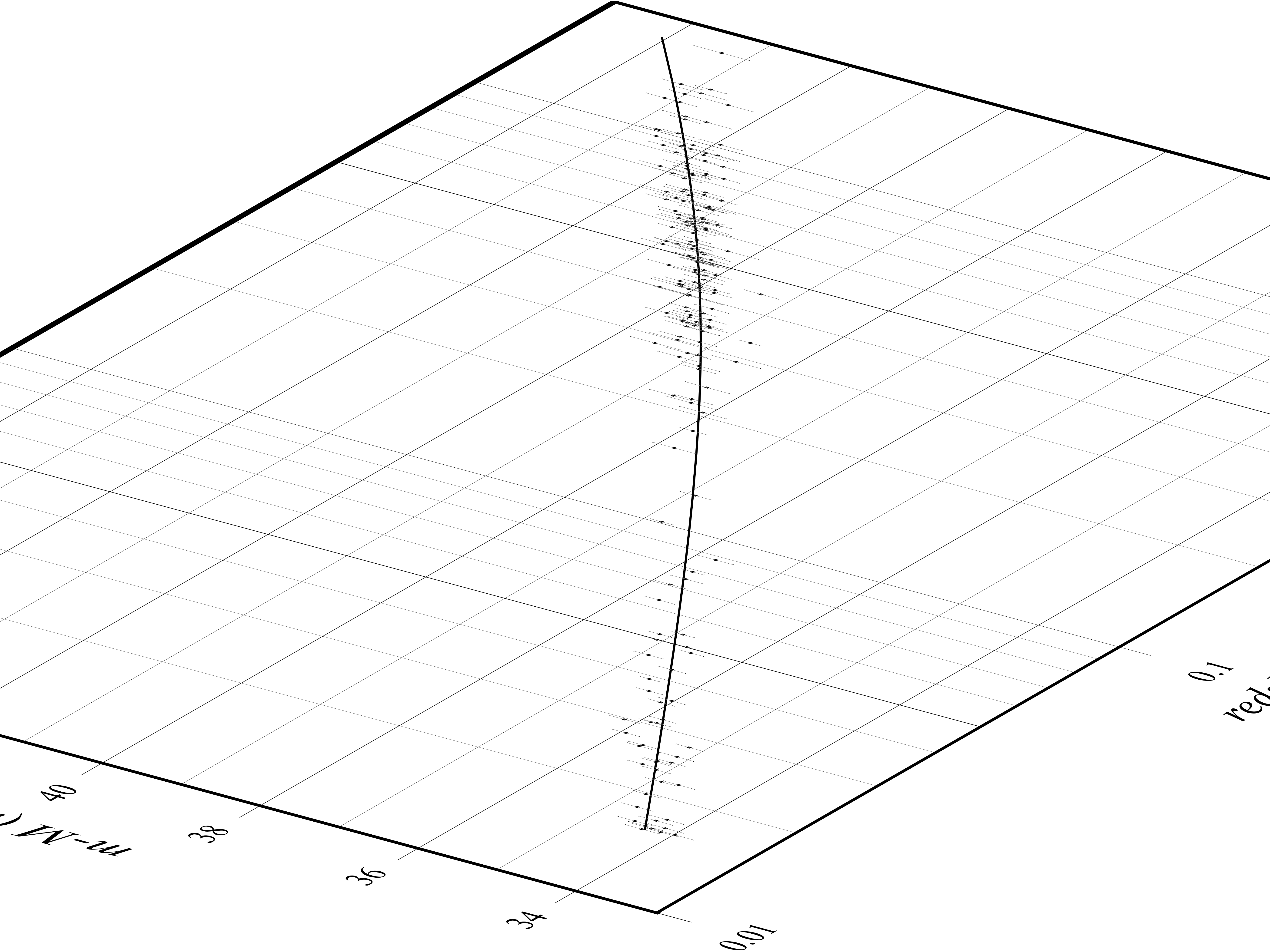
Examples of High-Redshift SNe

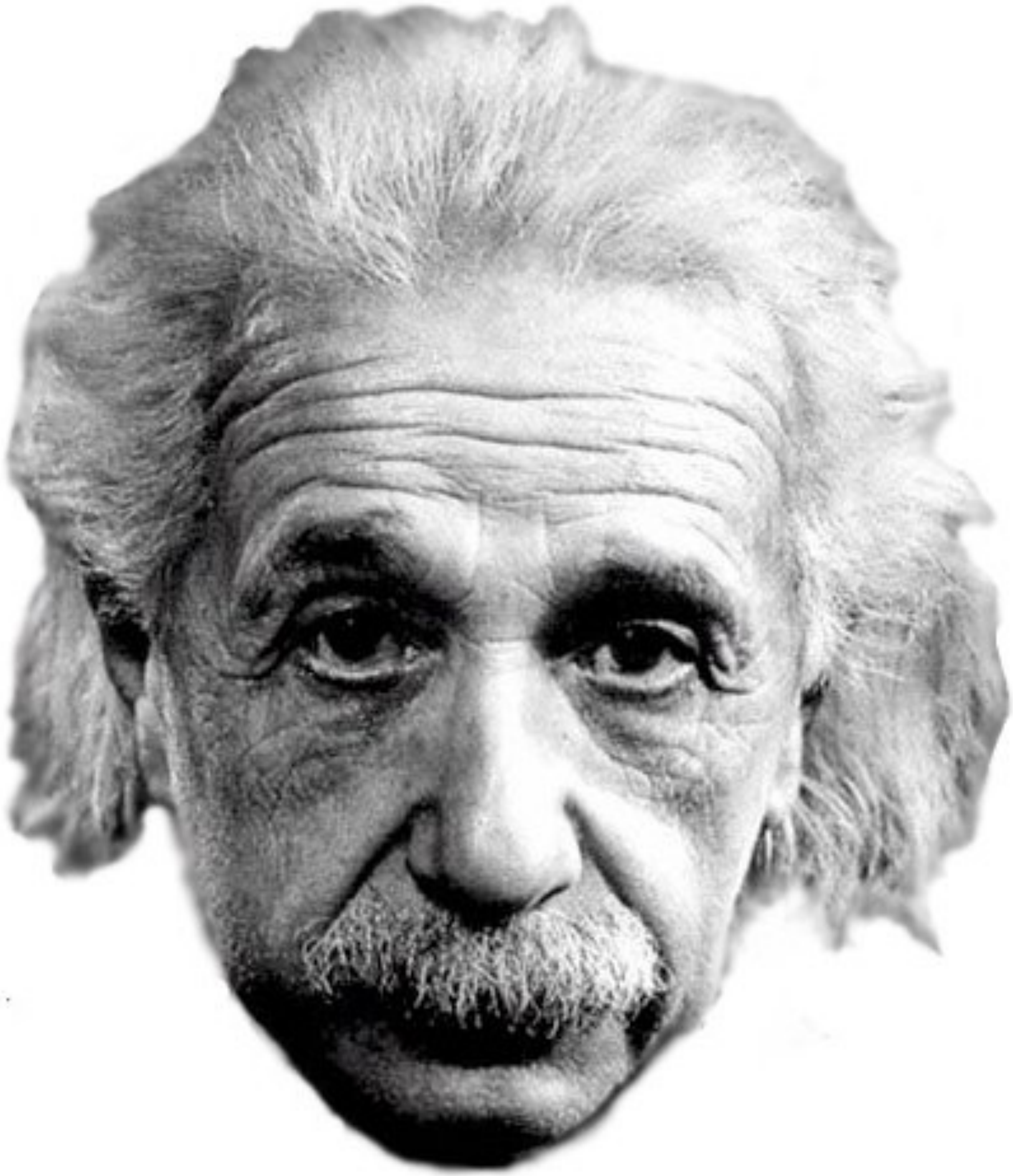
HST observations of SNe in distant galaxies
(Riess et al.)

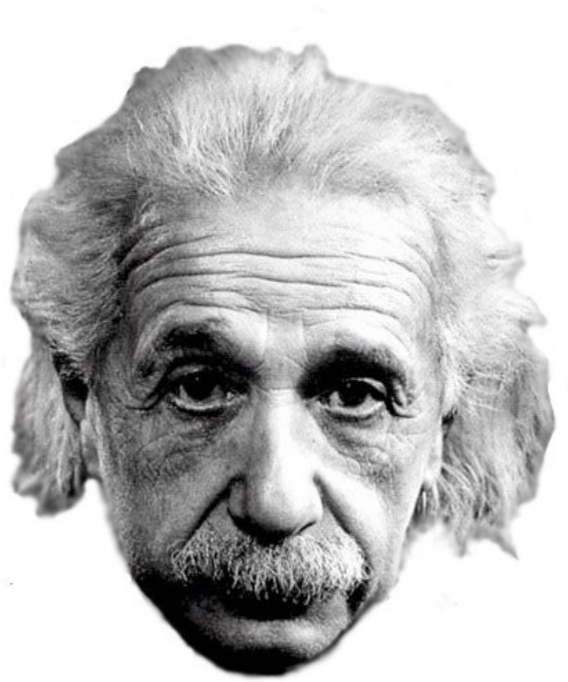
Note: you need to …

- Detect them
- Measure the light curves
- Do the K-corrections
- Get the redshifts

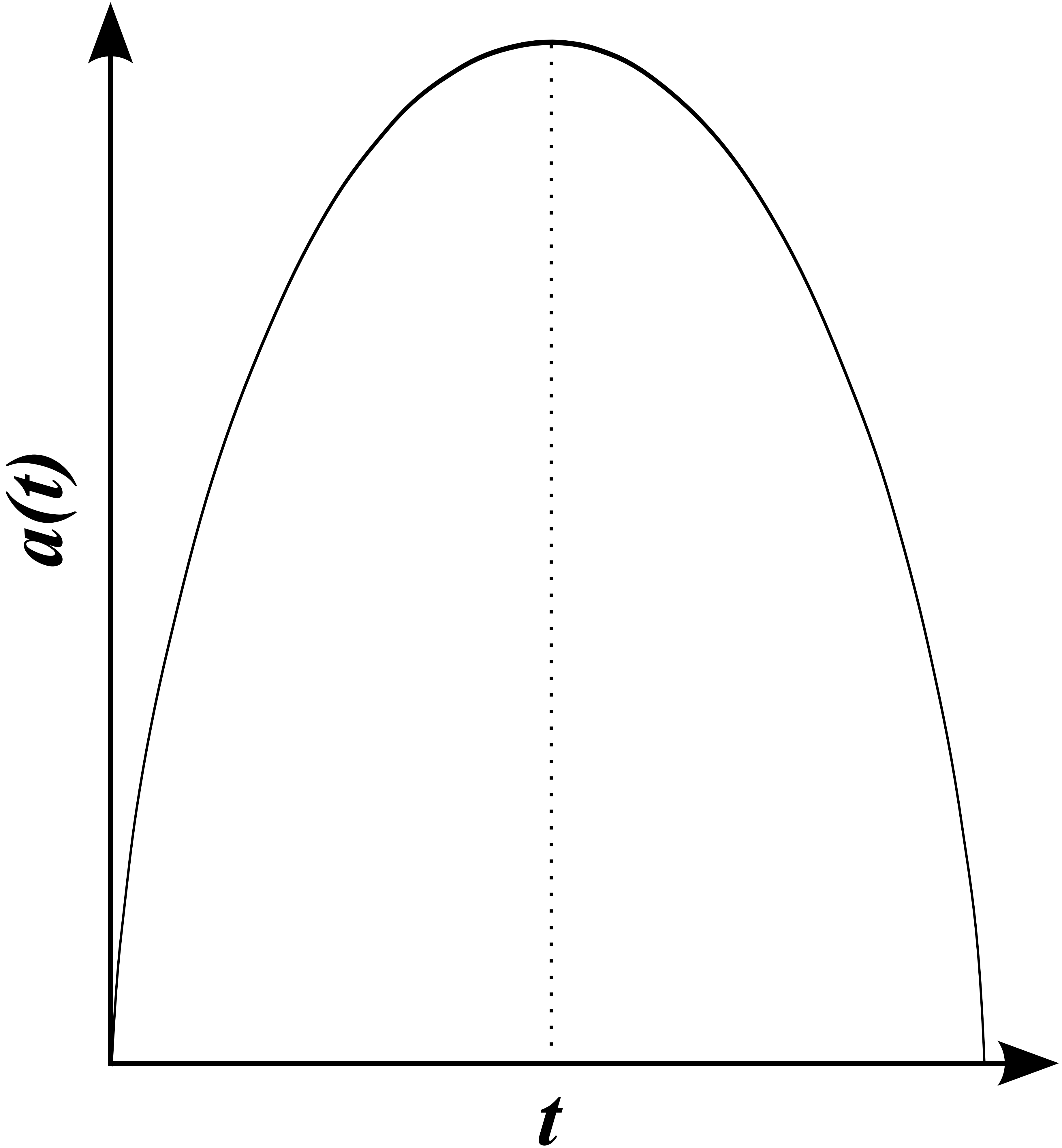



40
38
36
34
0.01
0.1

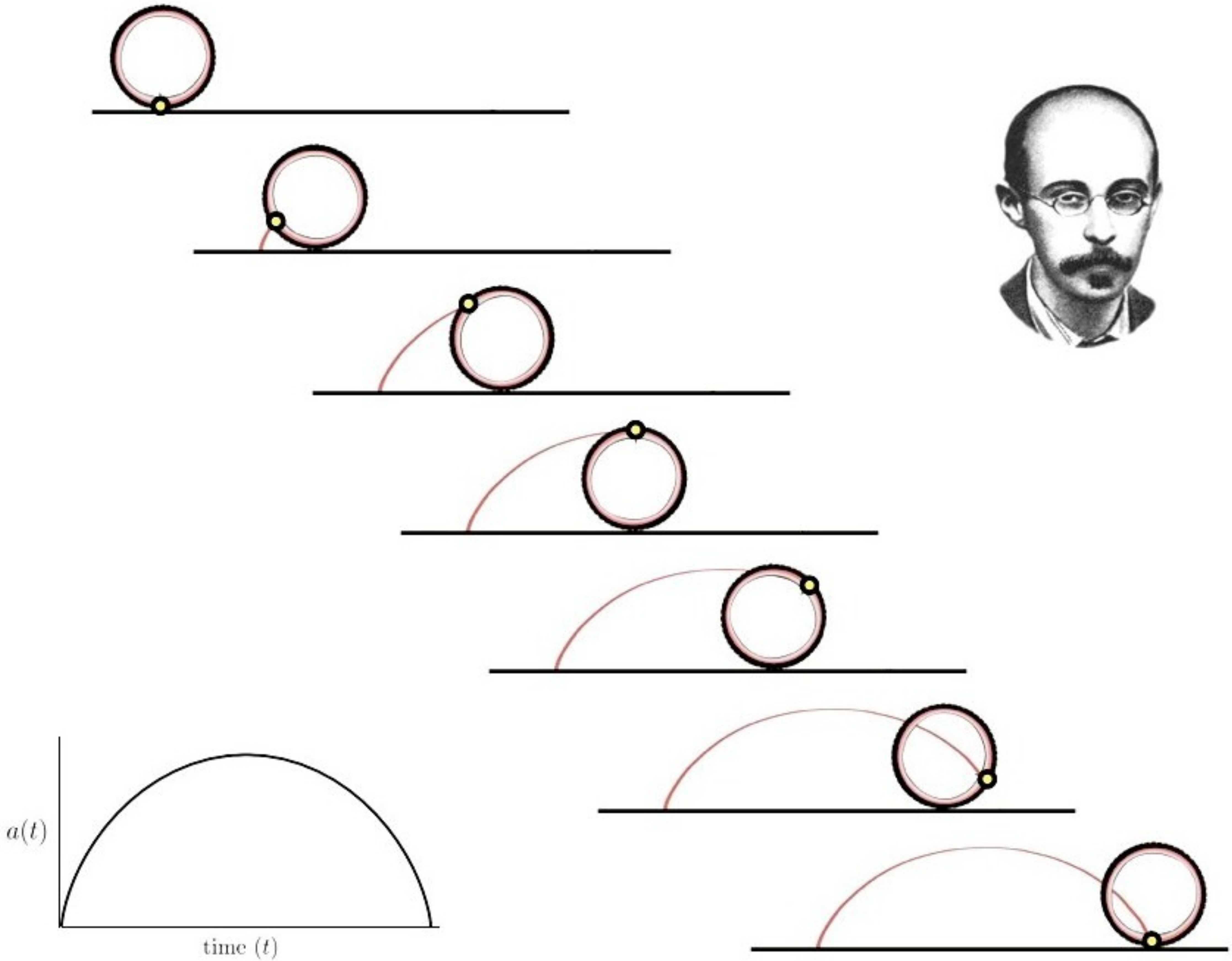


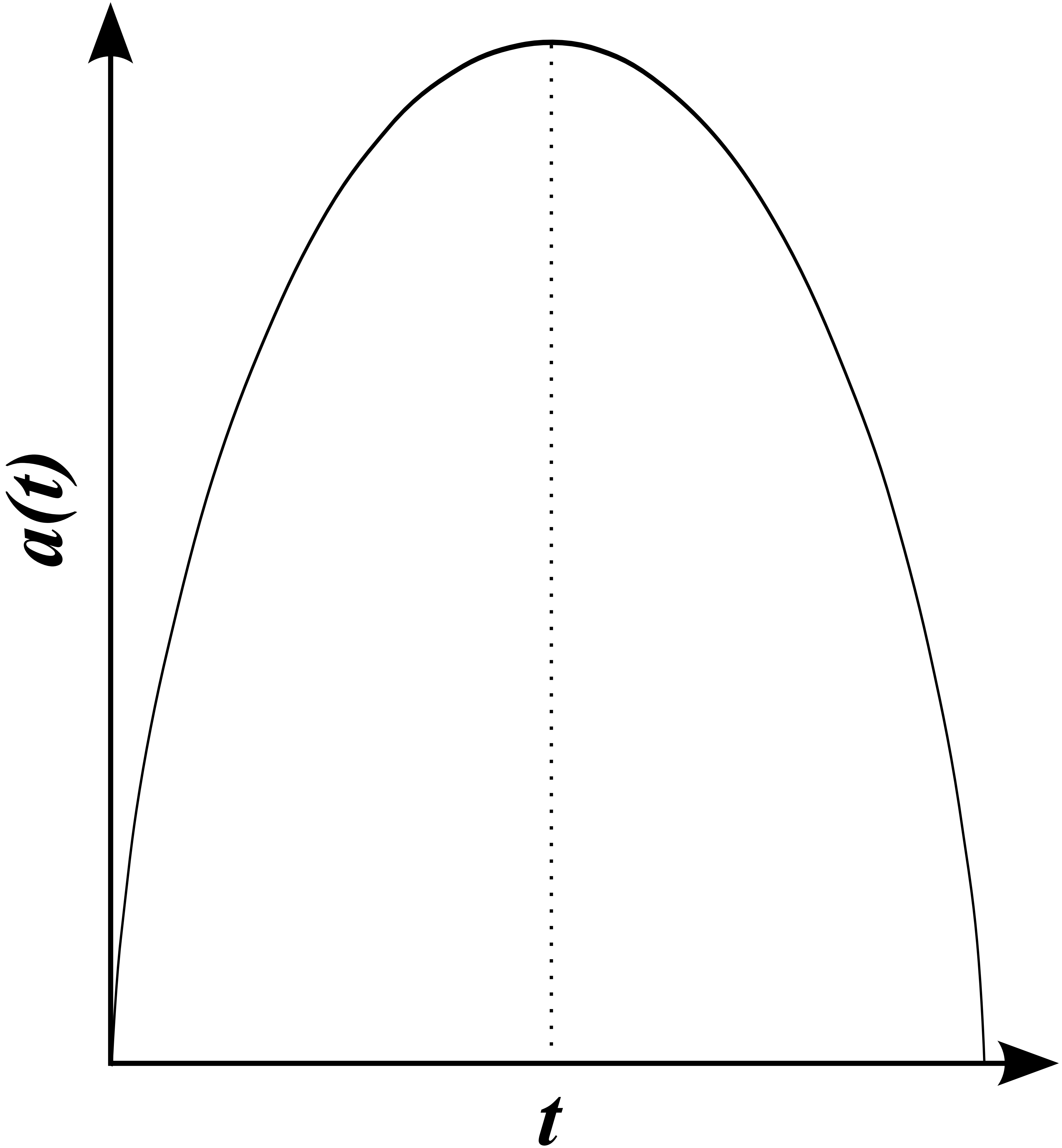


(Curvature of geometry) = (Mass)

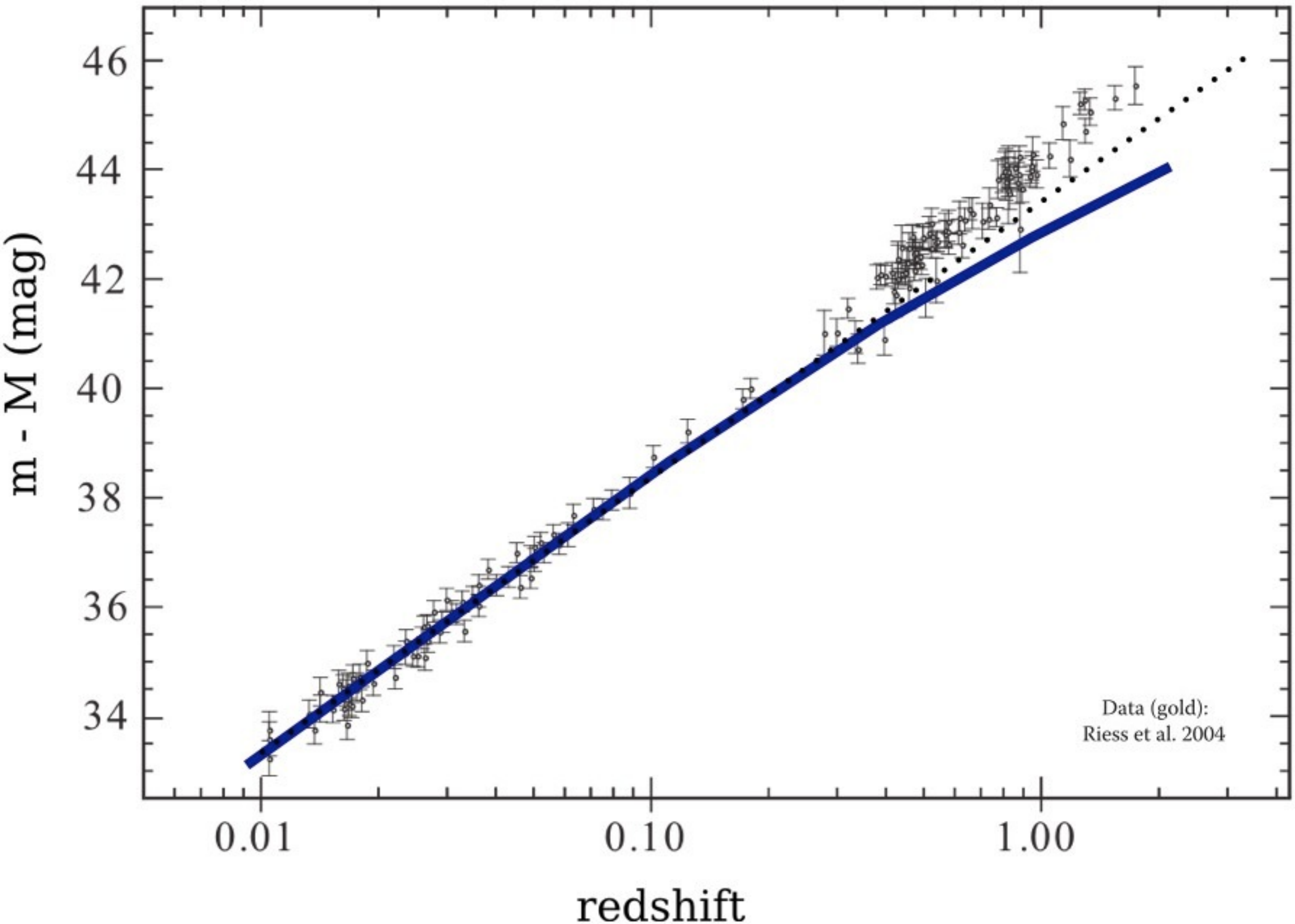


a(t)
t


$a(t)$
time (t)

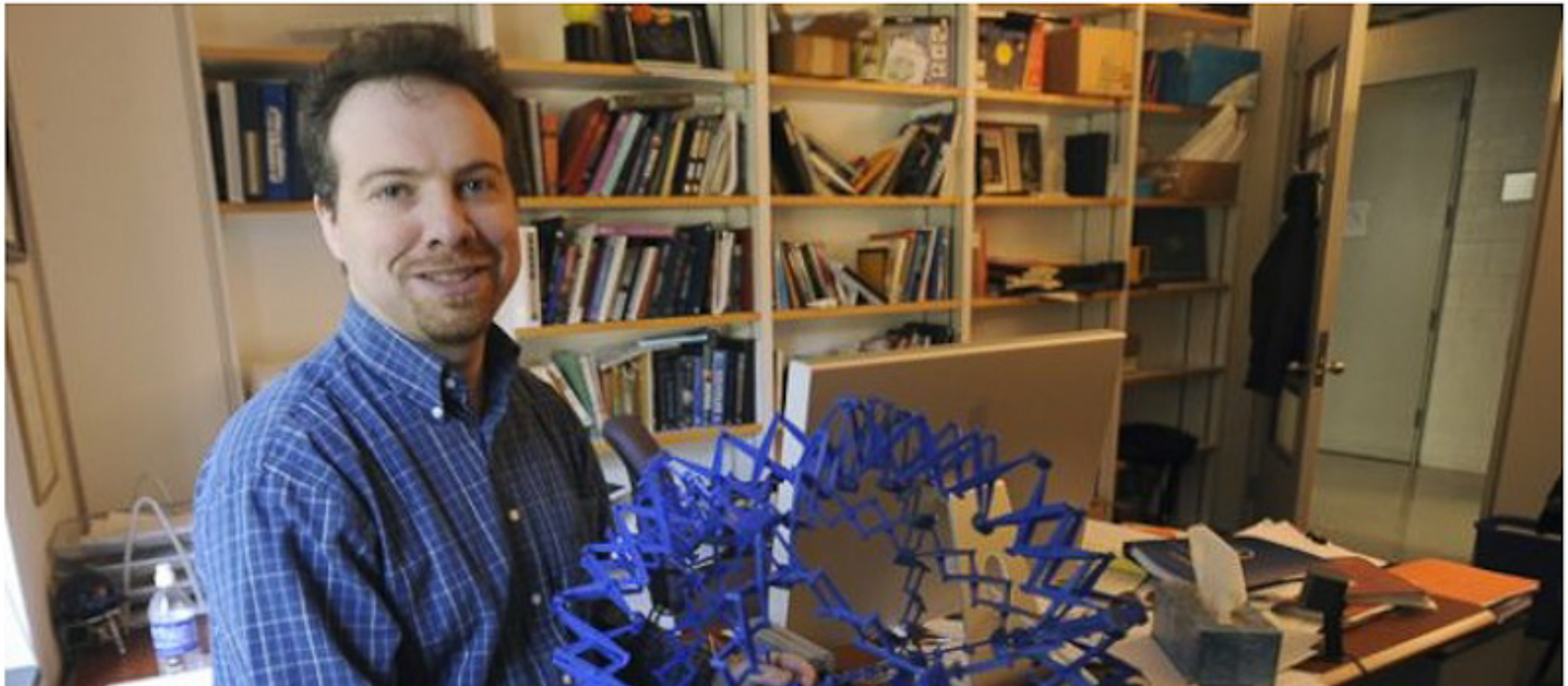


a(t)
t


46
44
42
40
38
36
34
m - M (mag)
0.01
0.10
1.00
redshift
Data (gold):
Riess et al. 2004

Three Americans Share 2011 Nobel Prize in Physics

Published October 04, 2011 / Associated Press



The Royal Swedish Academy of Sciences says American Saul Perlmutter, U.S.-Australian citizen Brian Schmidt and U.S. scientist Adam Riess (pictured here in 2008) share the 2011 Nobel Prize in physics. The trio were honored Tuesday, Oct. 4, 2011 "for the discovery of the acclerating expansion of the universe through observations of distant supernovae." (AP PHOTO/THE JOHN D. AND CATHERINE T. MACARTHUR FOUNDATION, GAIL BURTON)

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Email

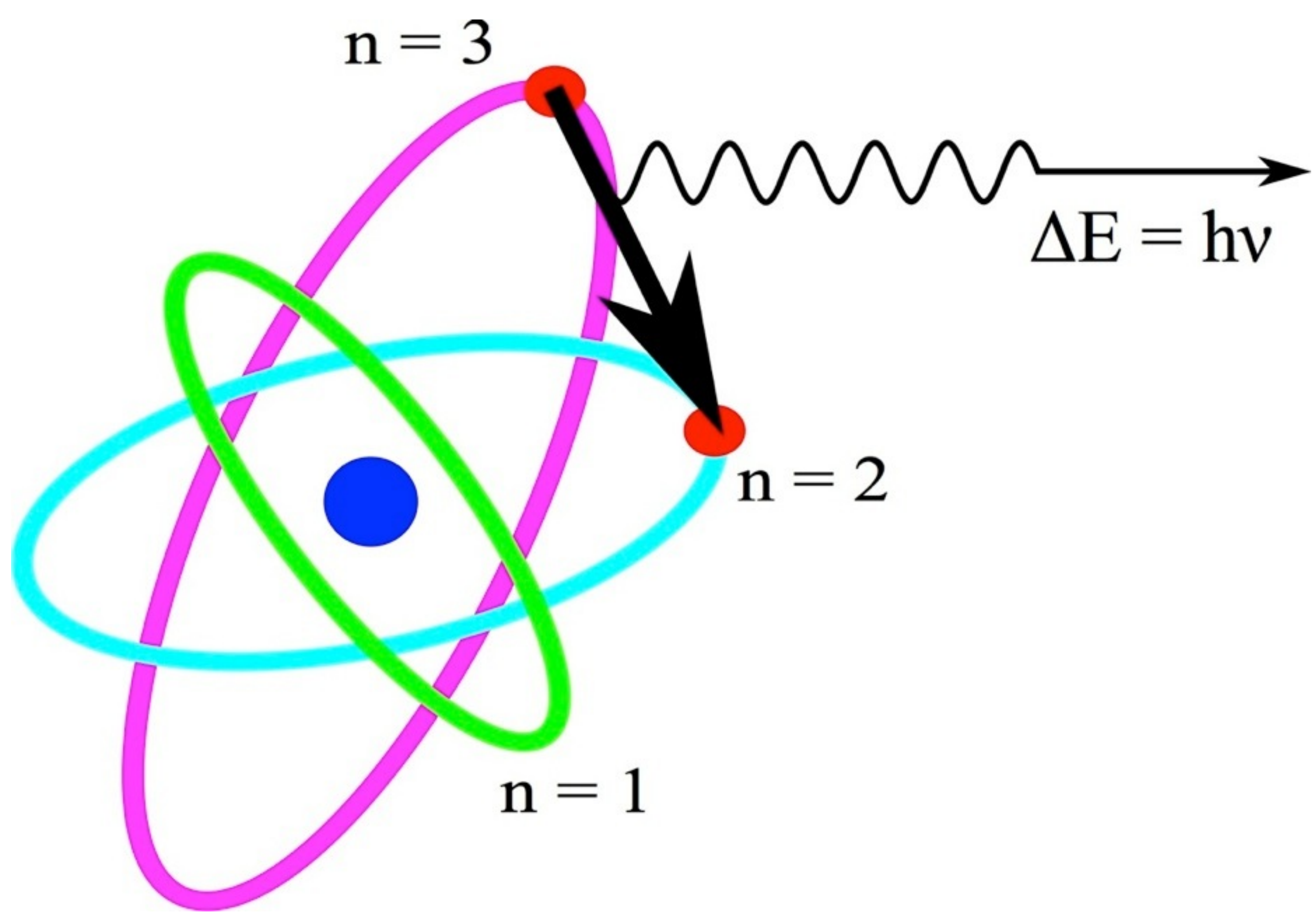
Share

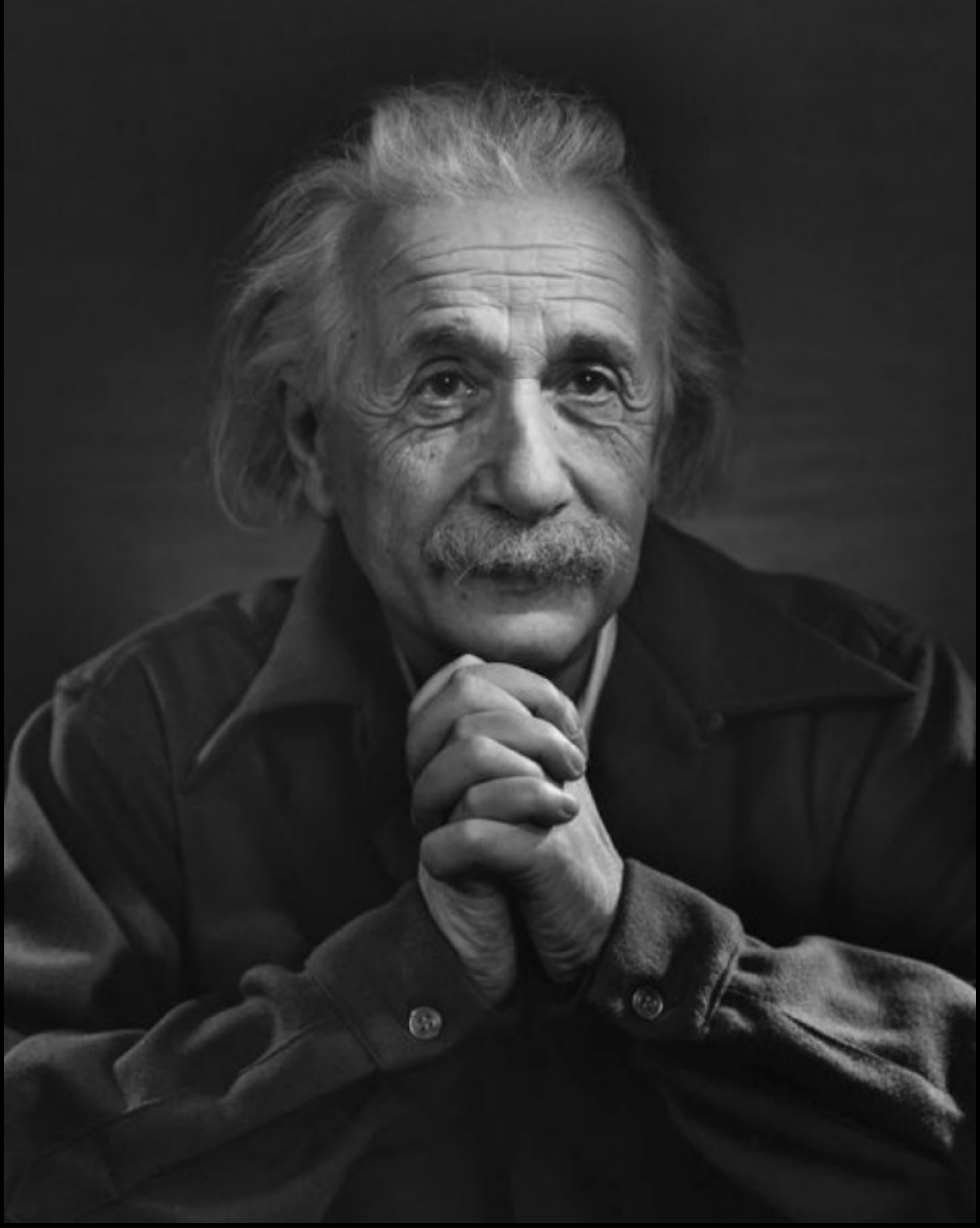
STOCKHOLM – Three U.S.-born scientists won the Nobel Prize in physics Tuesday for discovering that the universe is expanding at an accelerating pace, a stunning revelation that suggests the cosmos will eventually freeze to ice.


DANZAS


29 30 31

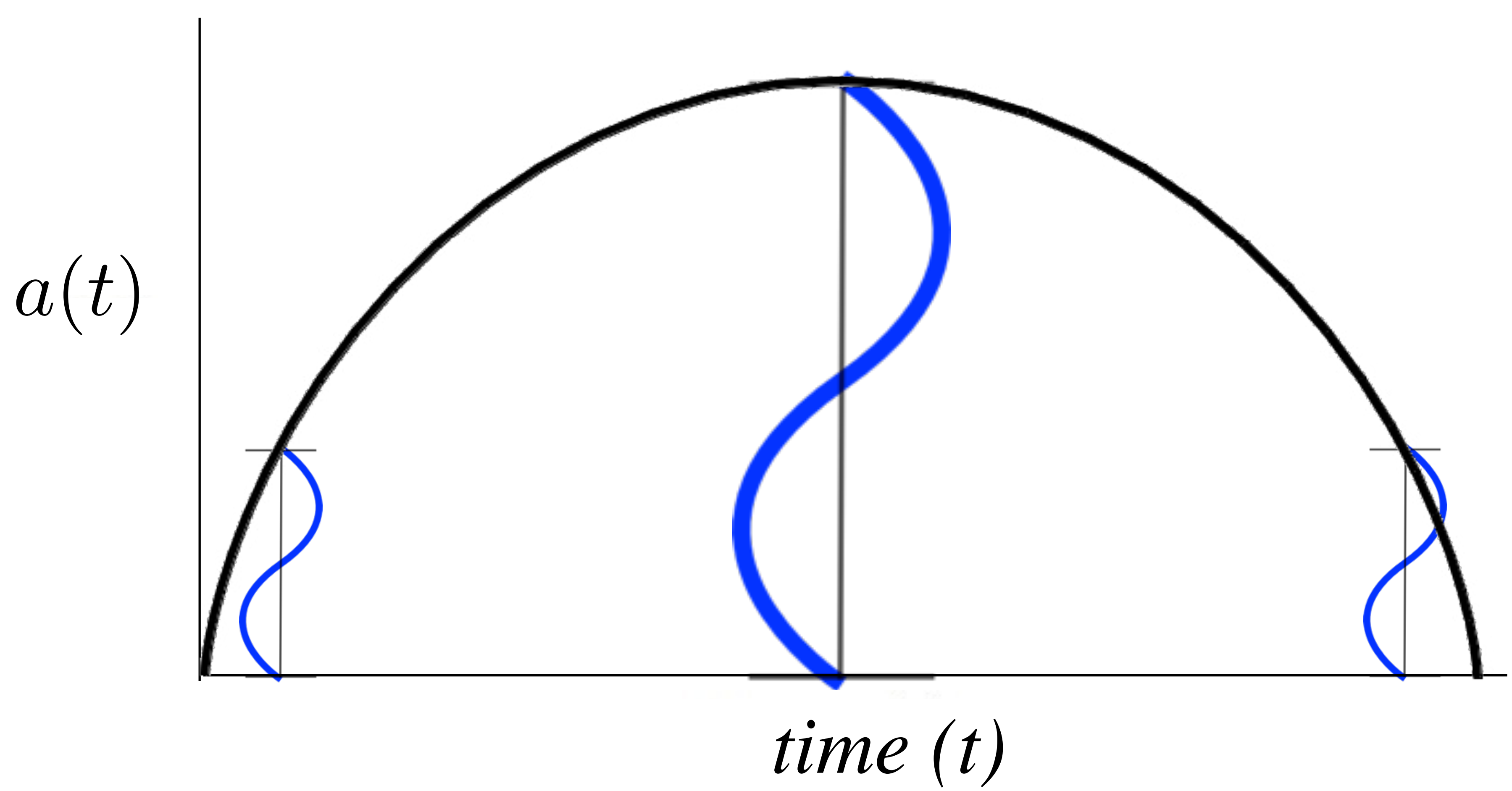
$$|\mathbf{F}| = \frac{1}{4\pi\varepsilon} \frac{|q_1 \, q_2|}{r^2}$$

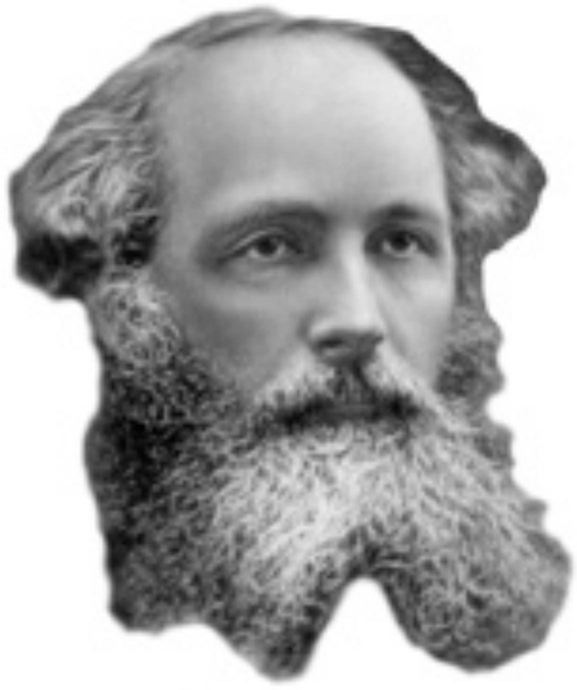


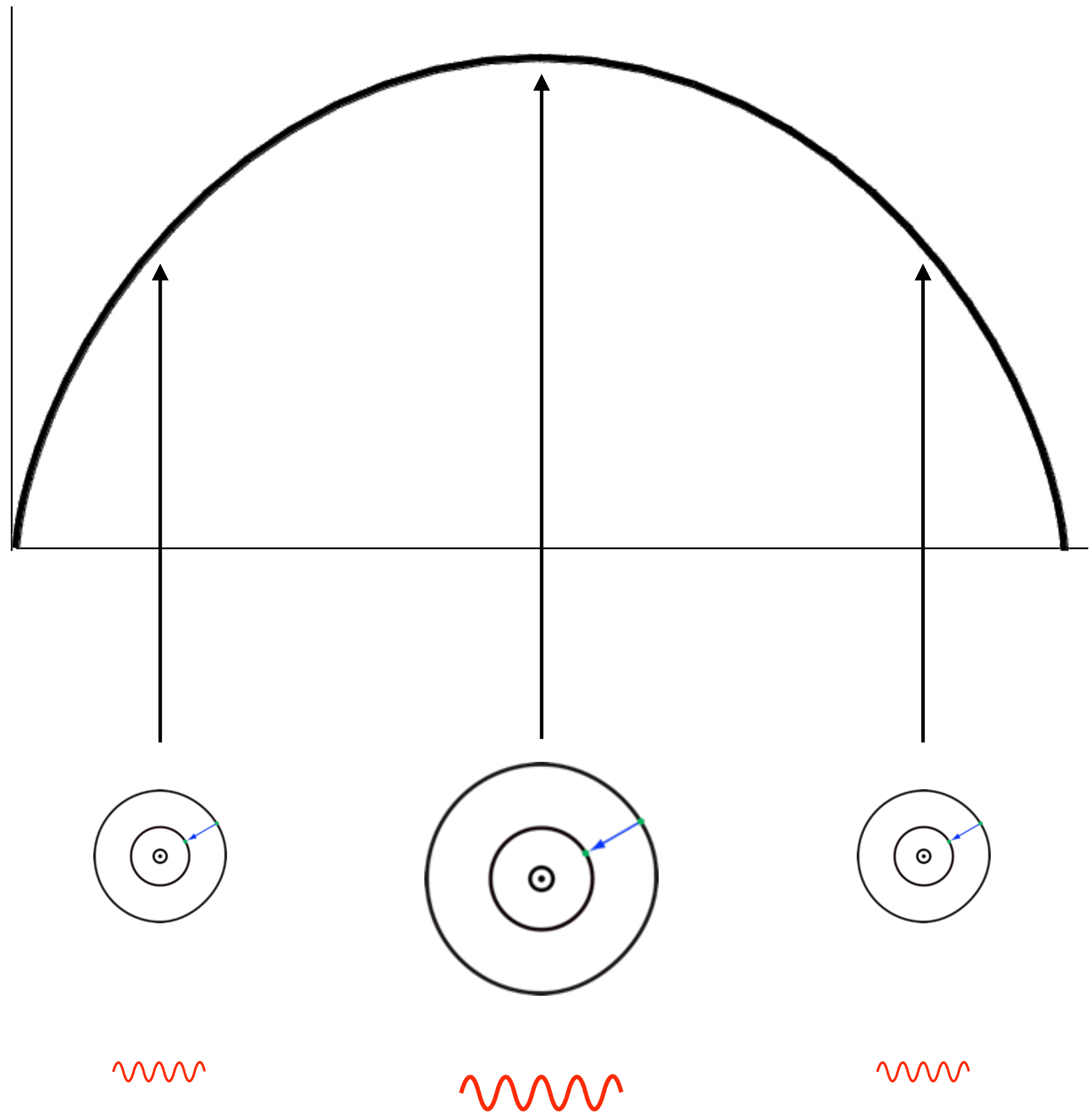


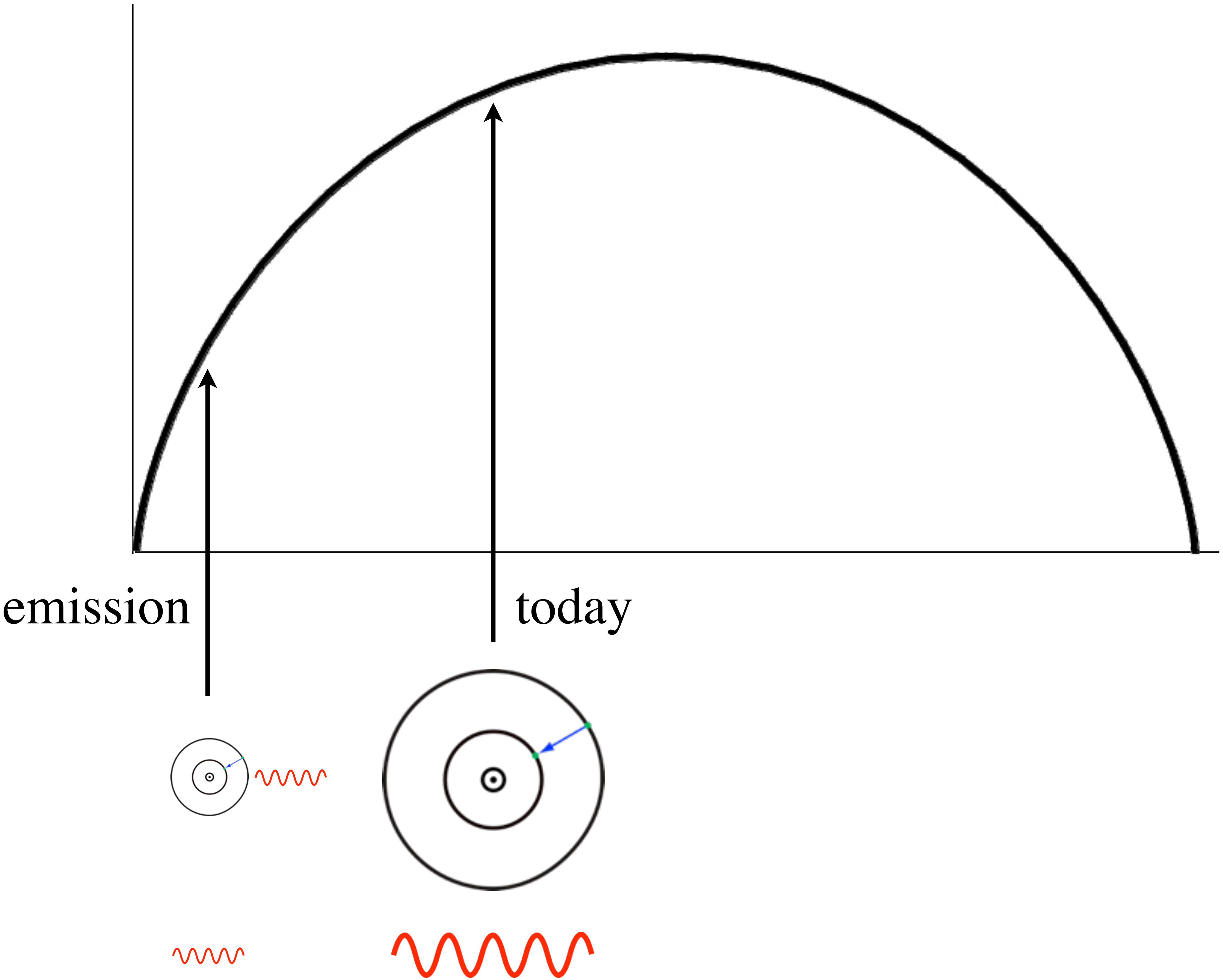
"In an expanding space all momenta decrease . . . This simple law has an even simpler interpretation in wave mechanics: all wavelengths, being inversely proportional to the momenta, simply expand with space."

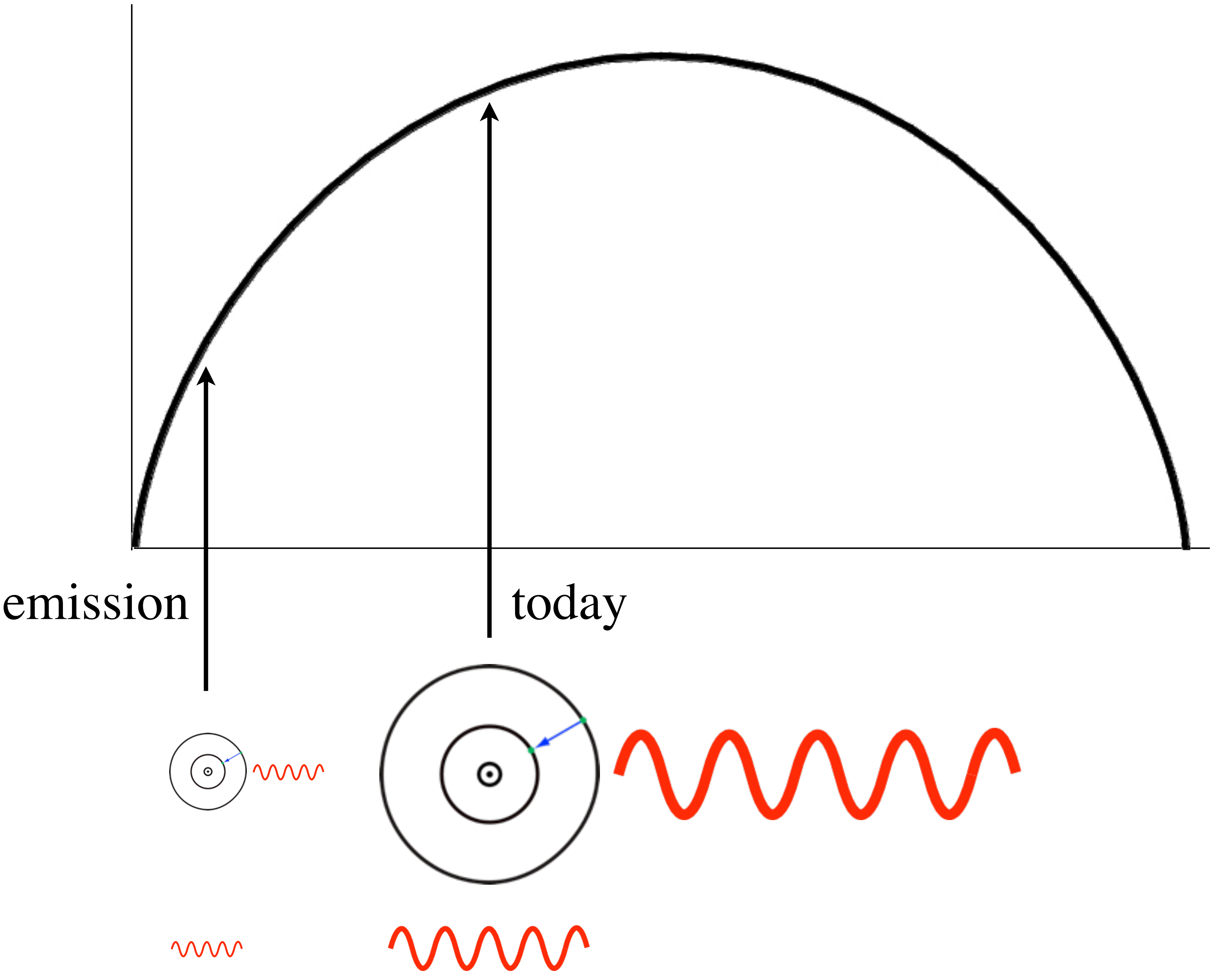
Erwin Schrödinger

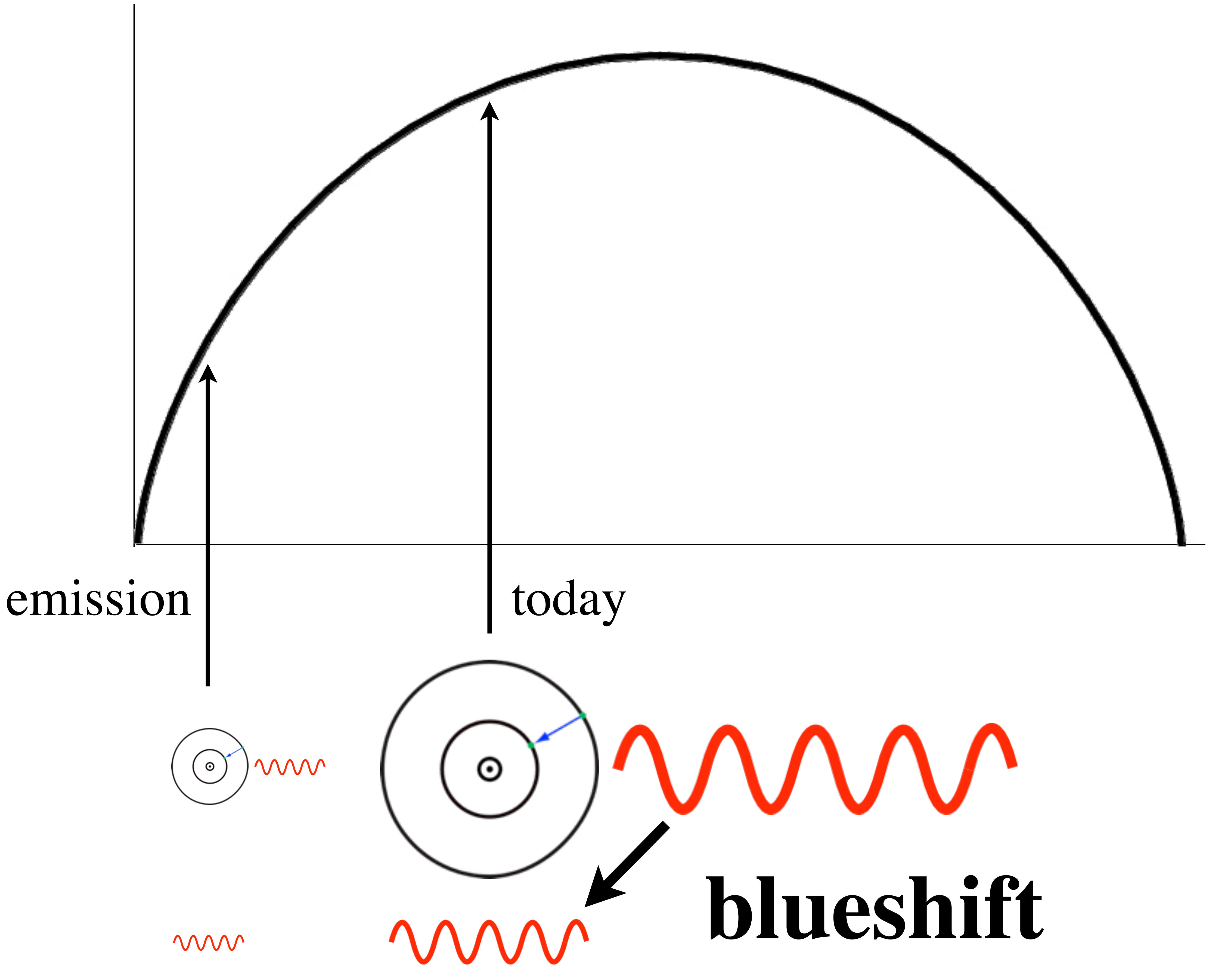


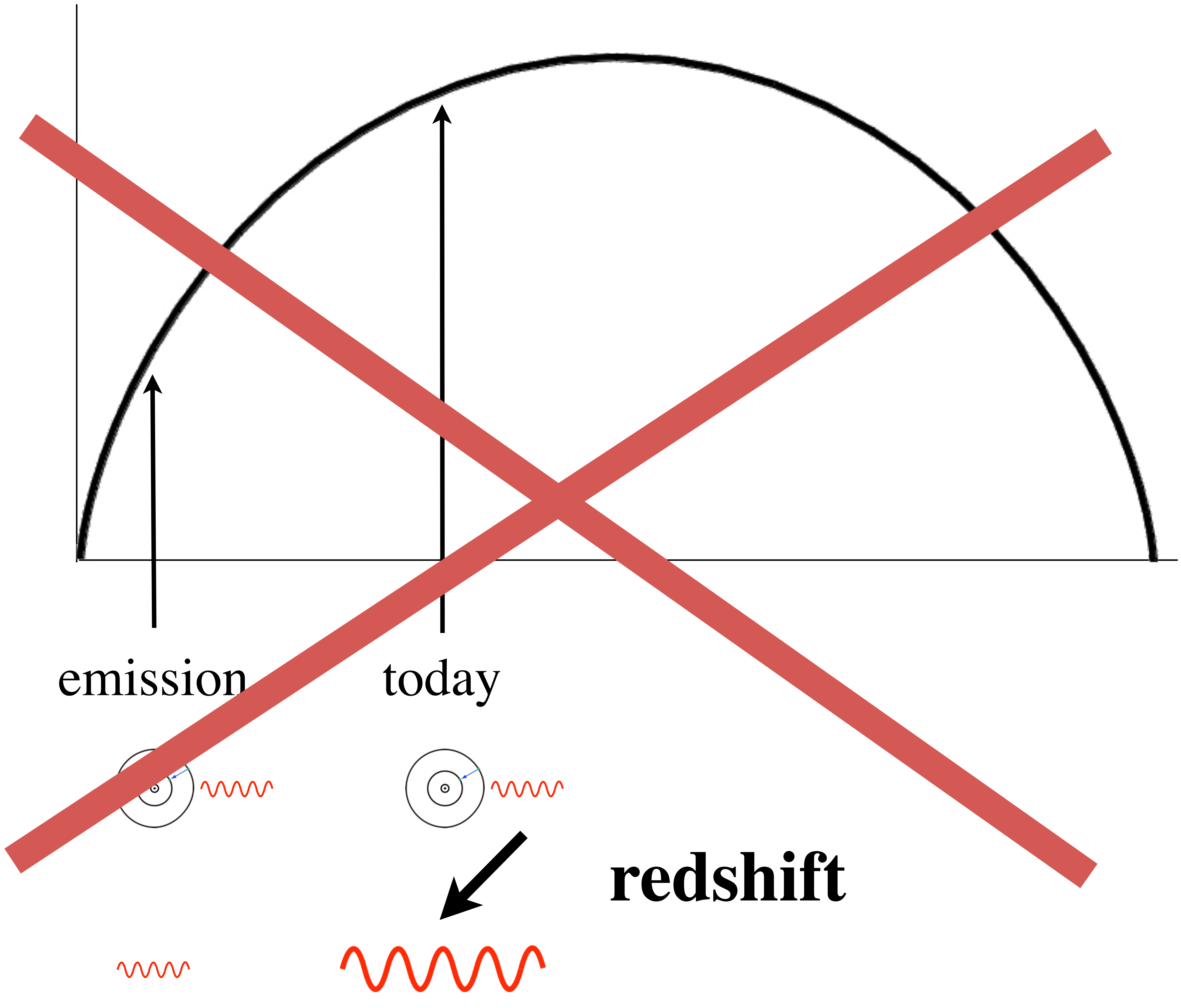


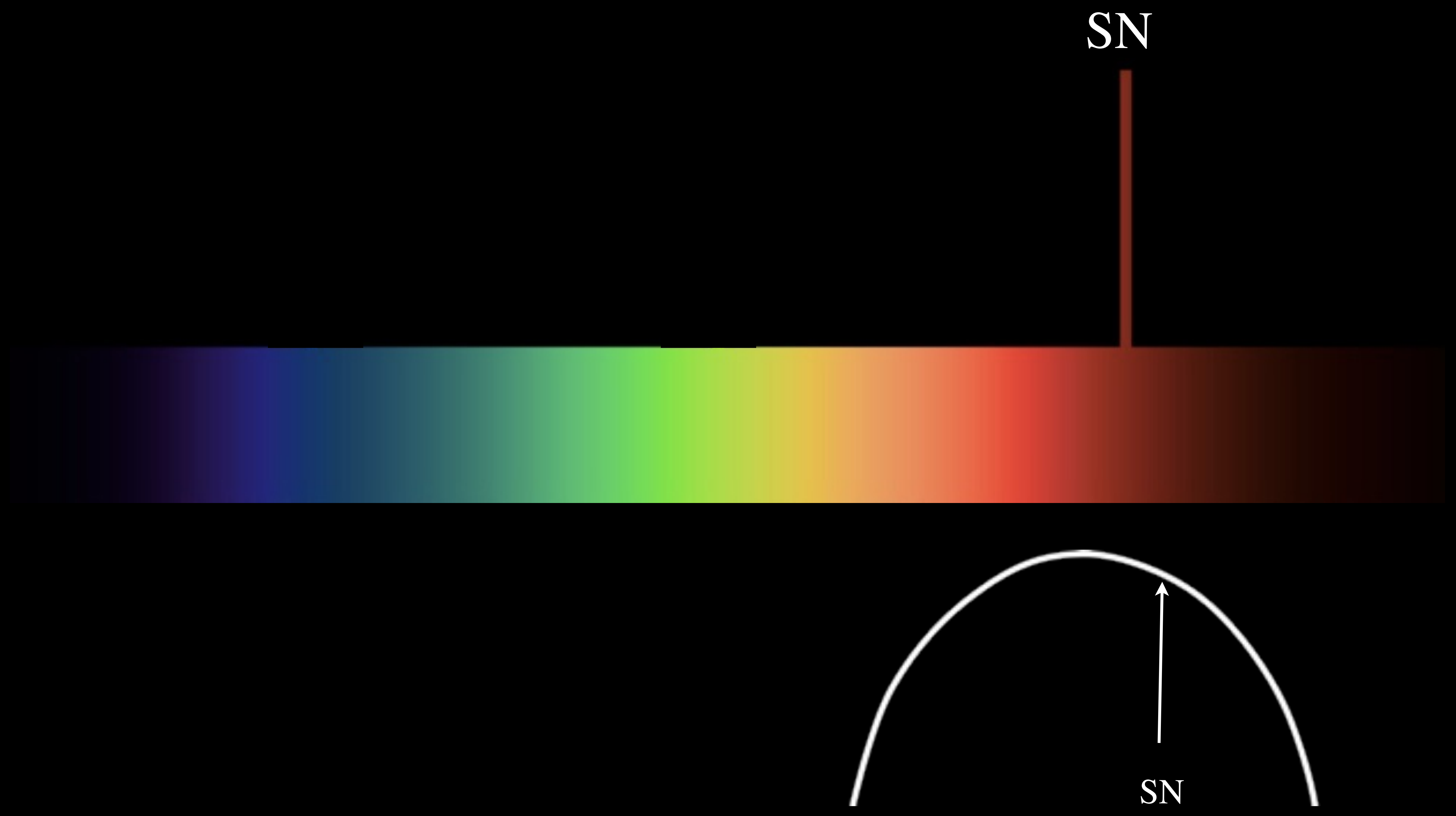


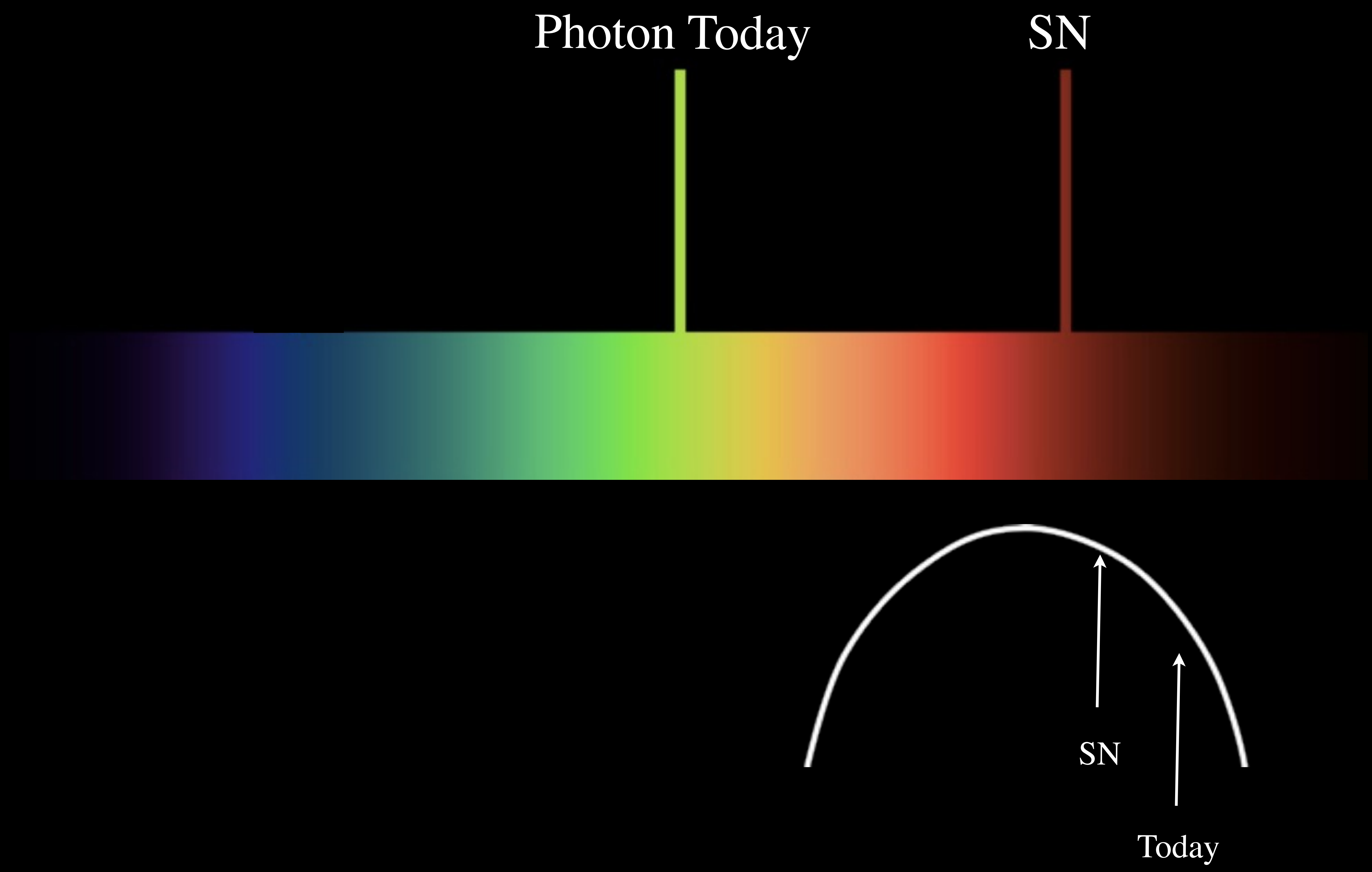

emission
today

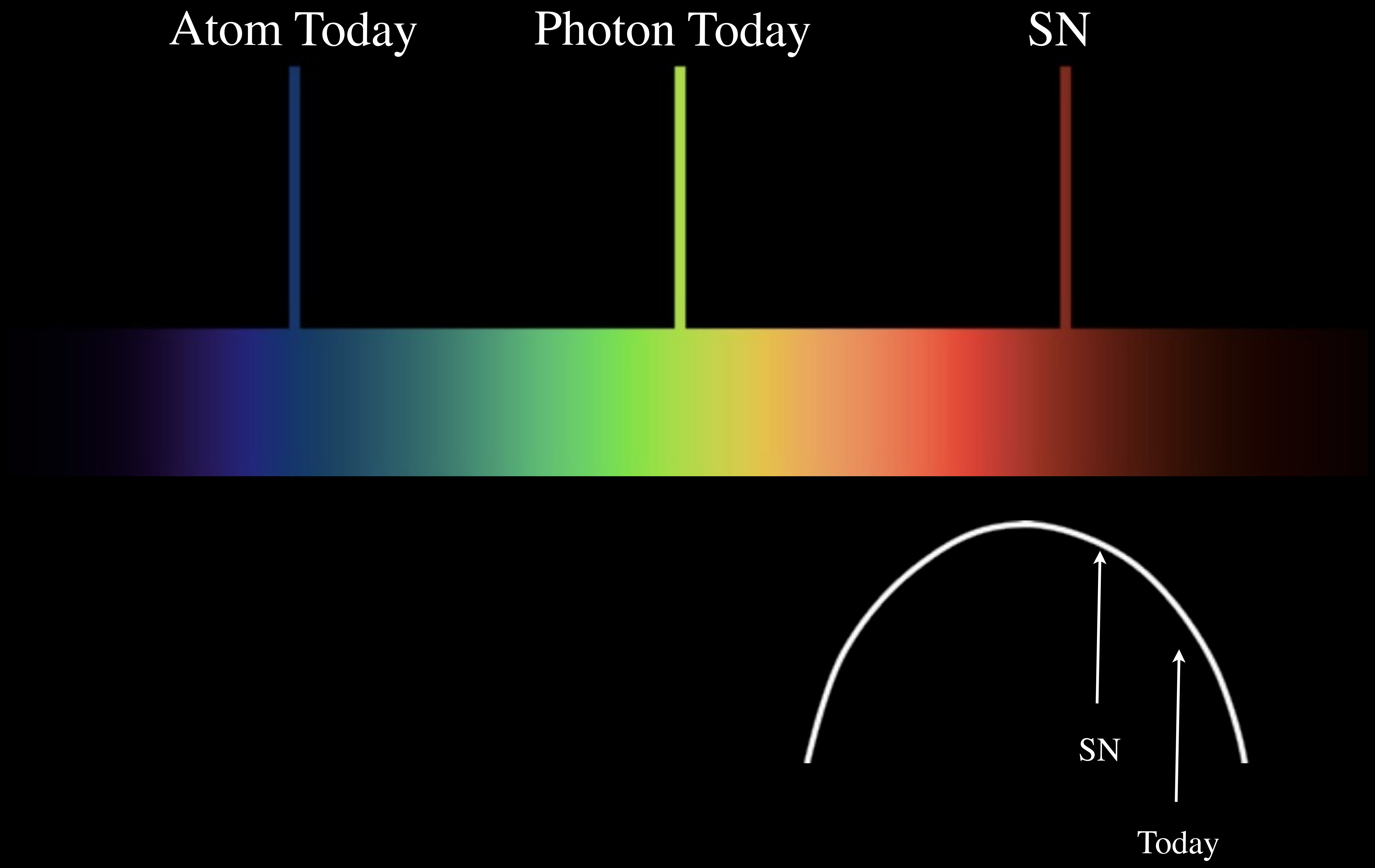

emission
today

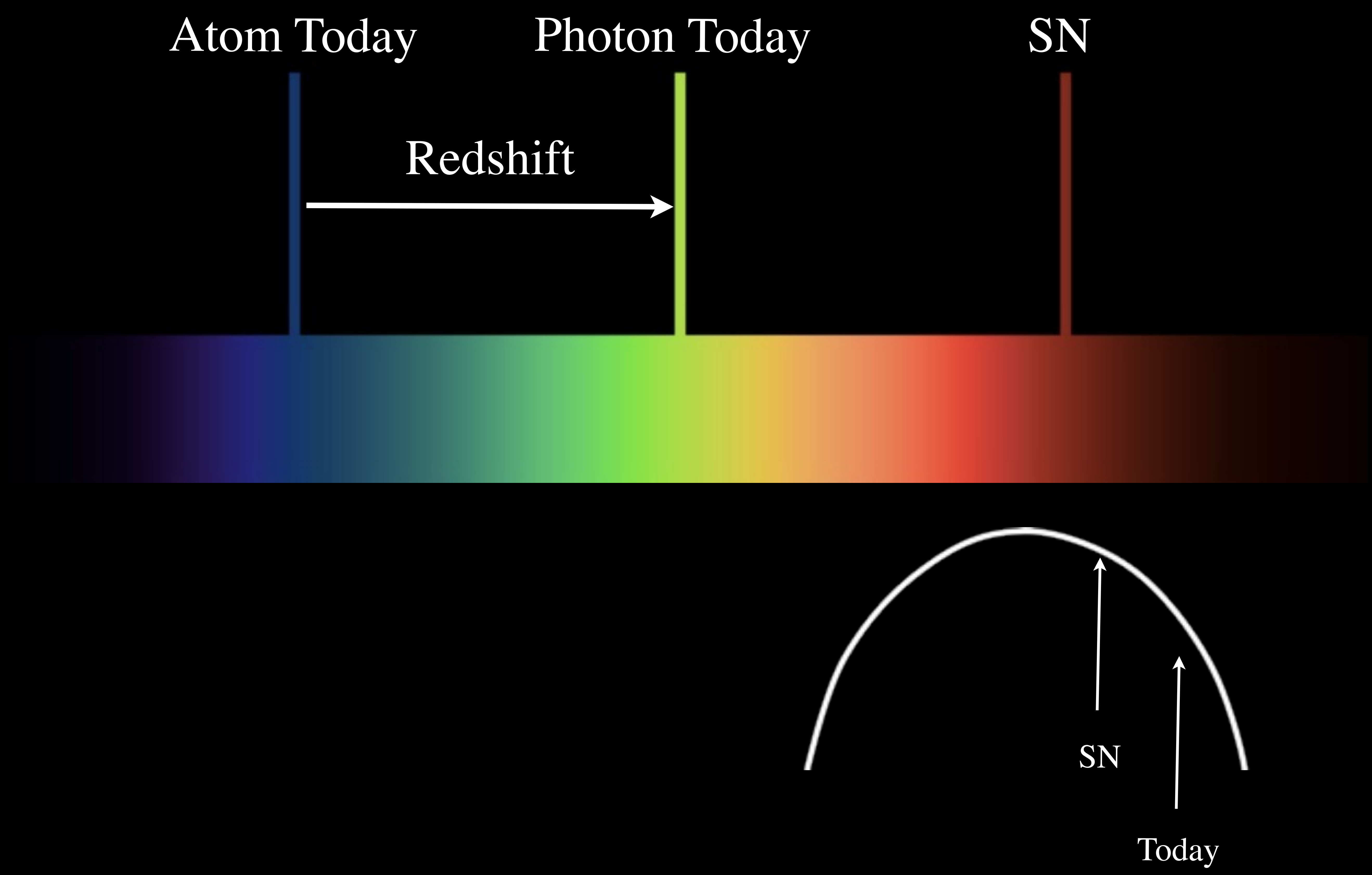

emission
today
blueshift

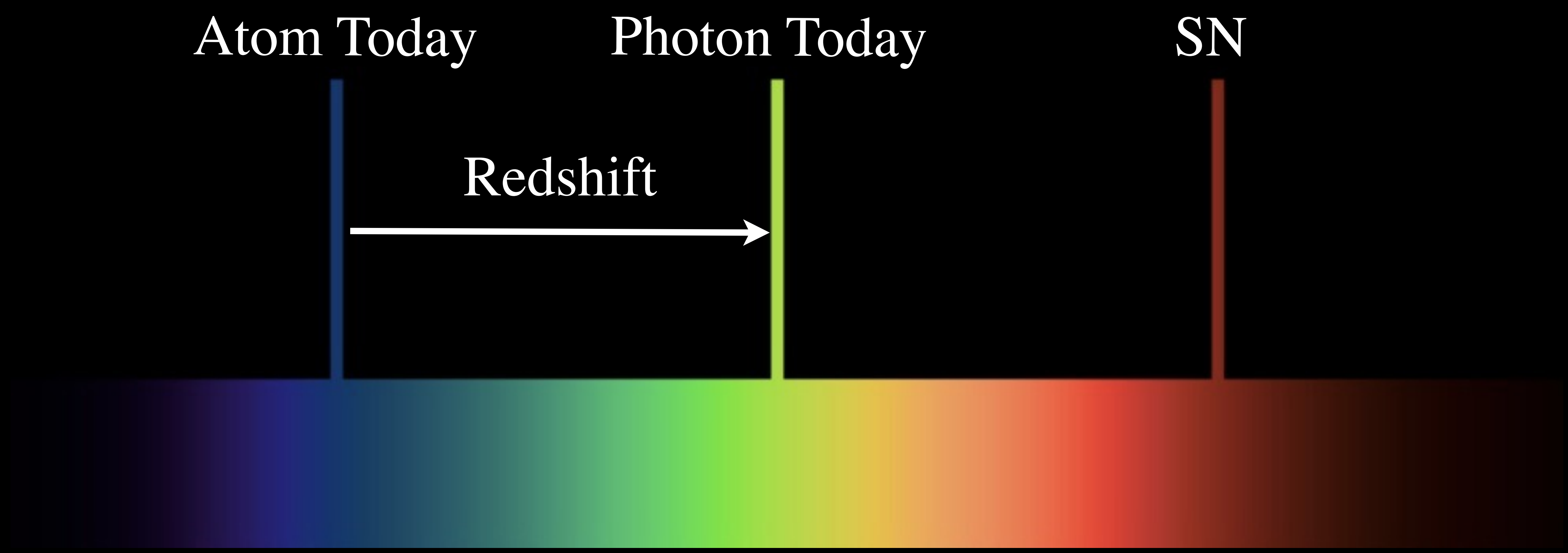

emission
today
redshift


SN
SN

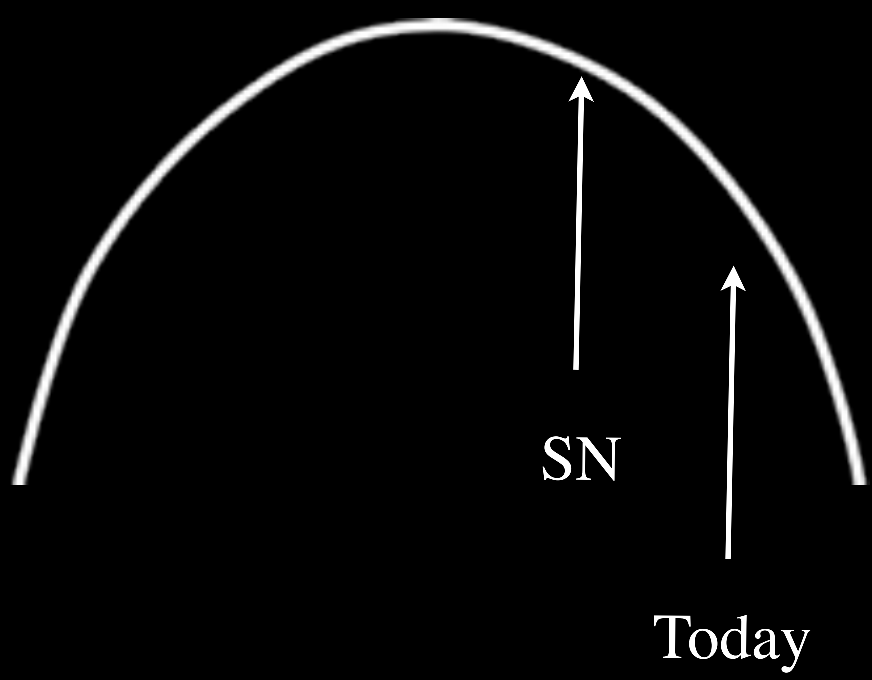

Photon Today
SN
SN
Today

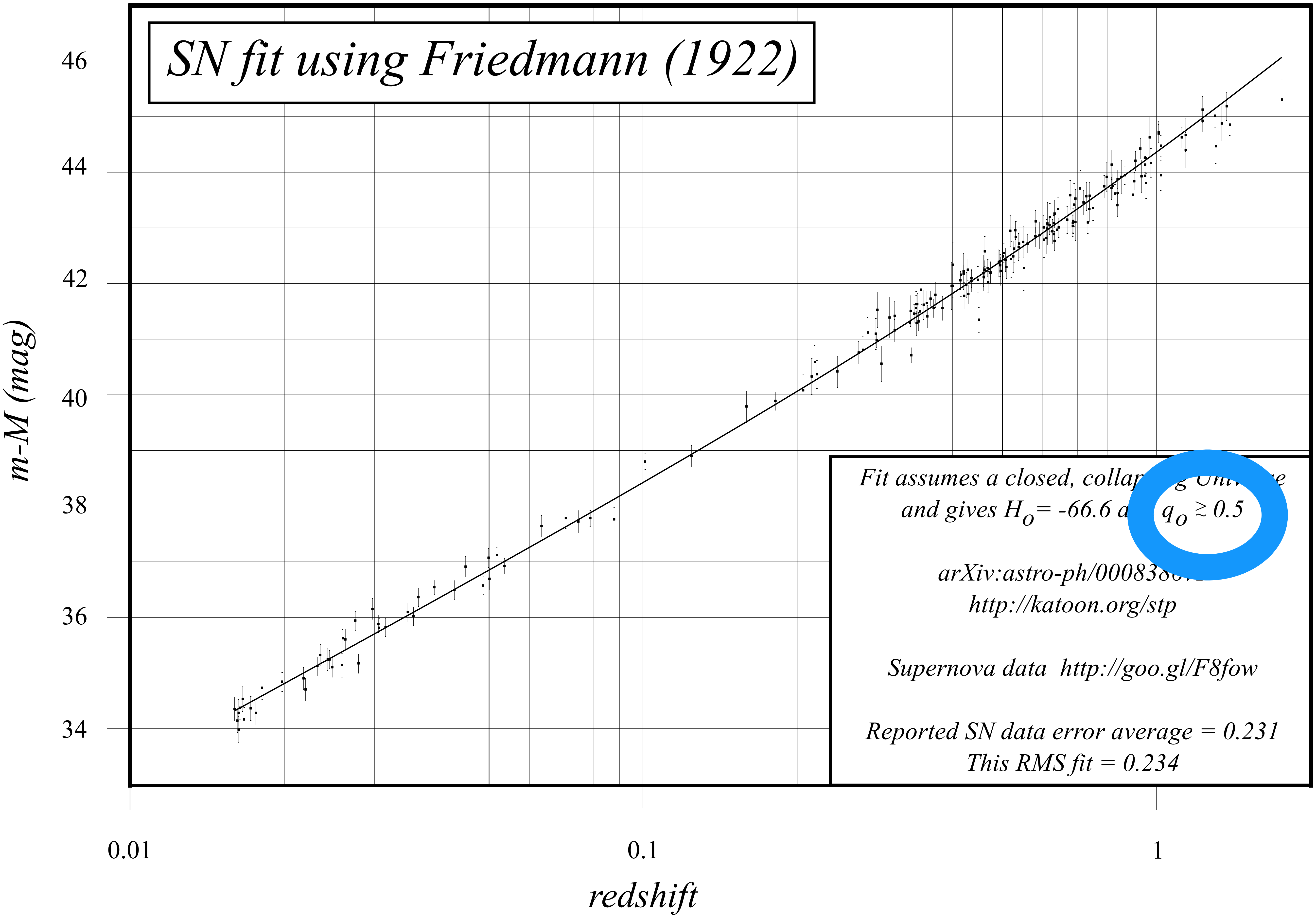

Atom Today
Photon Today
SN
SN
Today


Atom Today
Photon Today
SN
Redshift
SN
Today

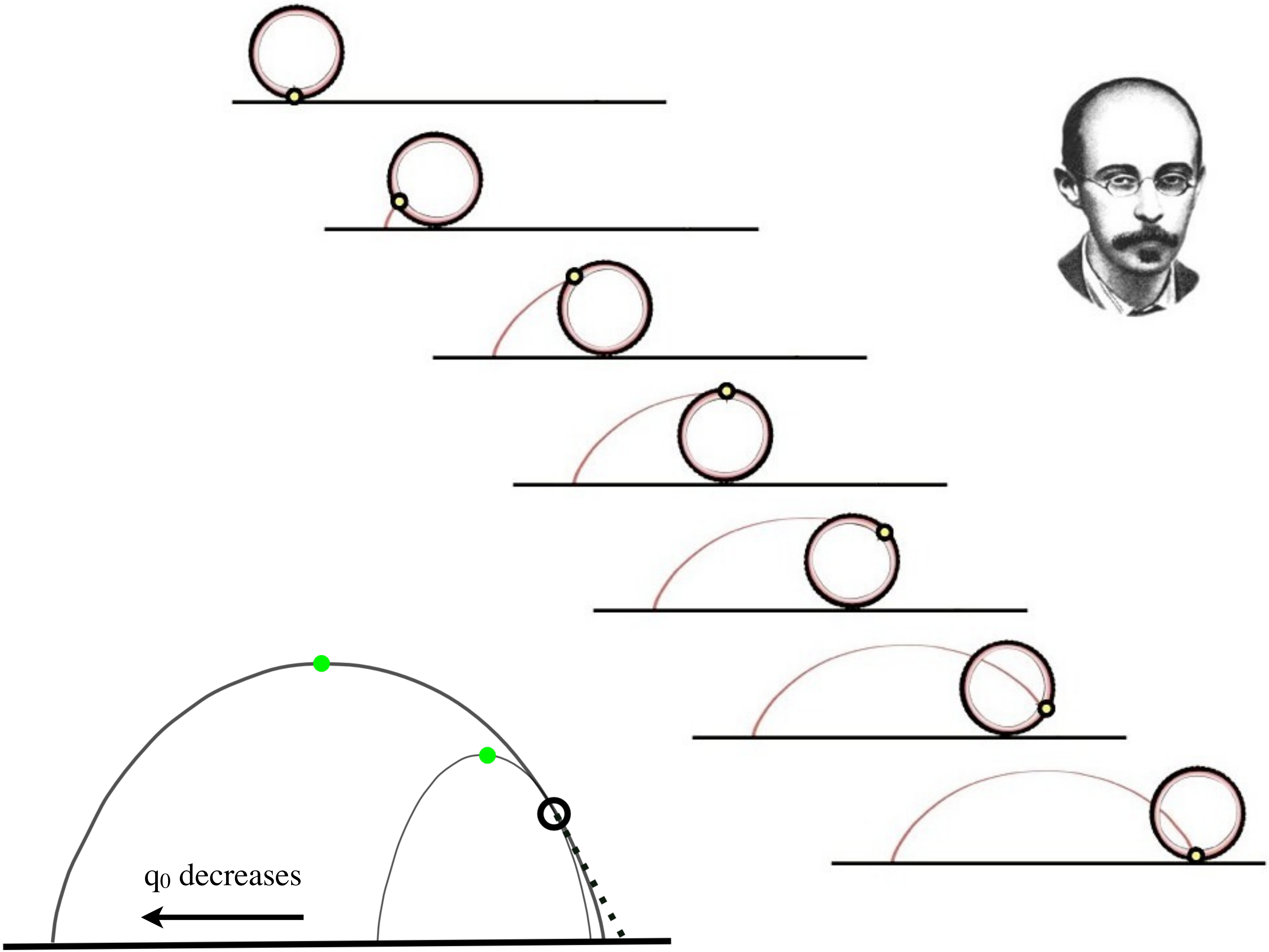


Redshift means collapse

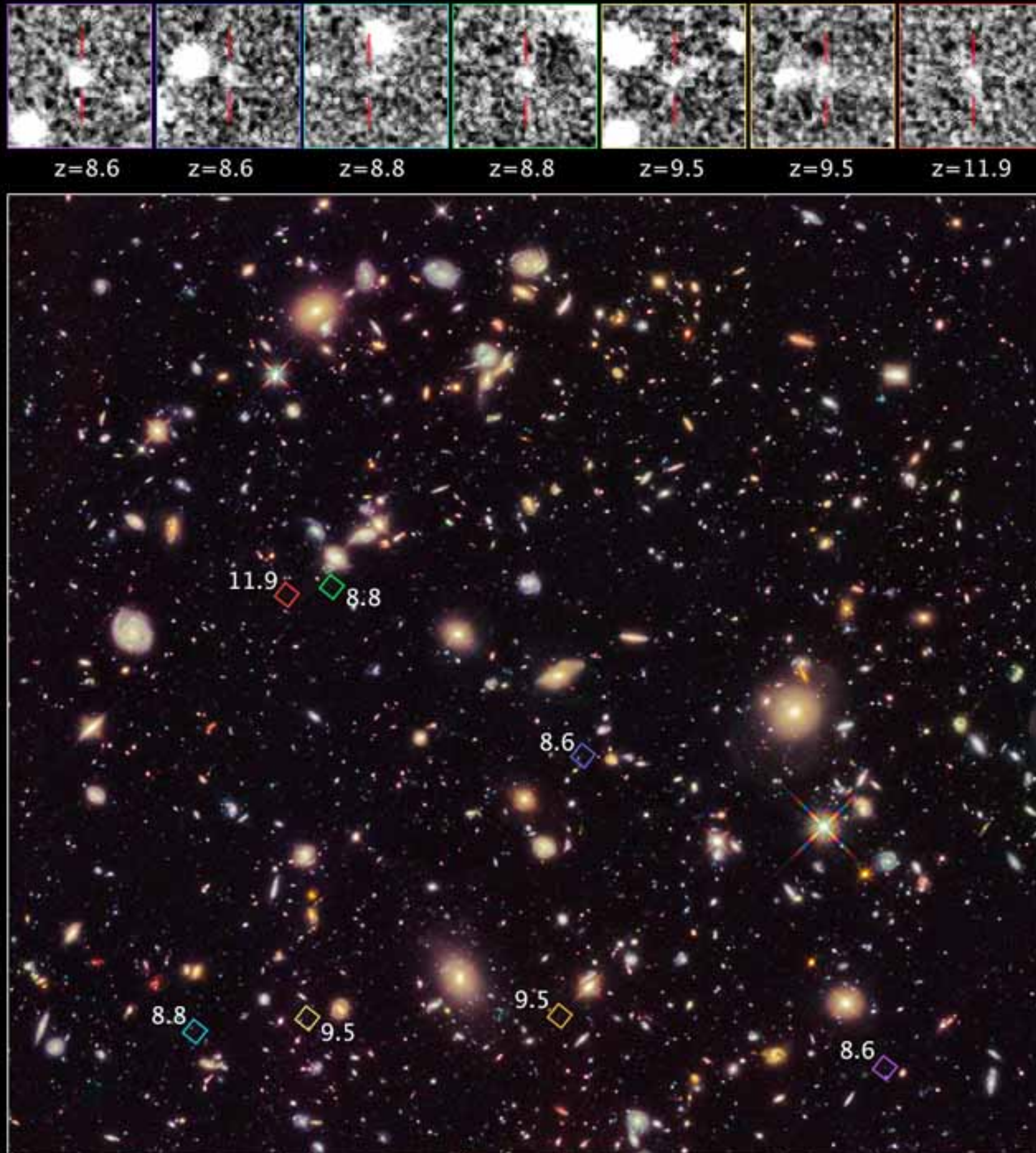




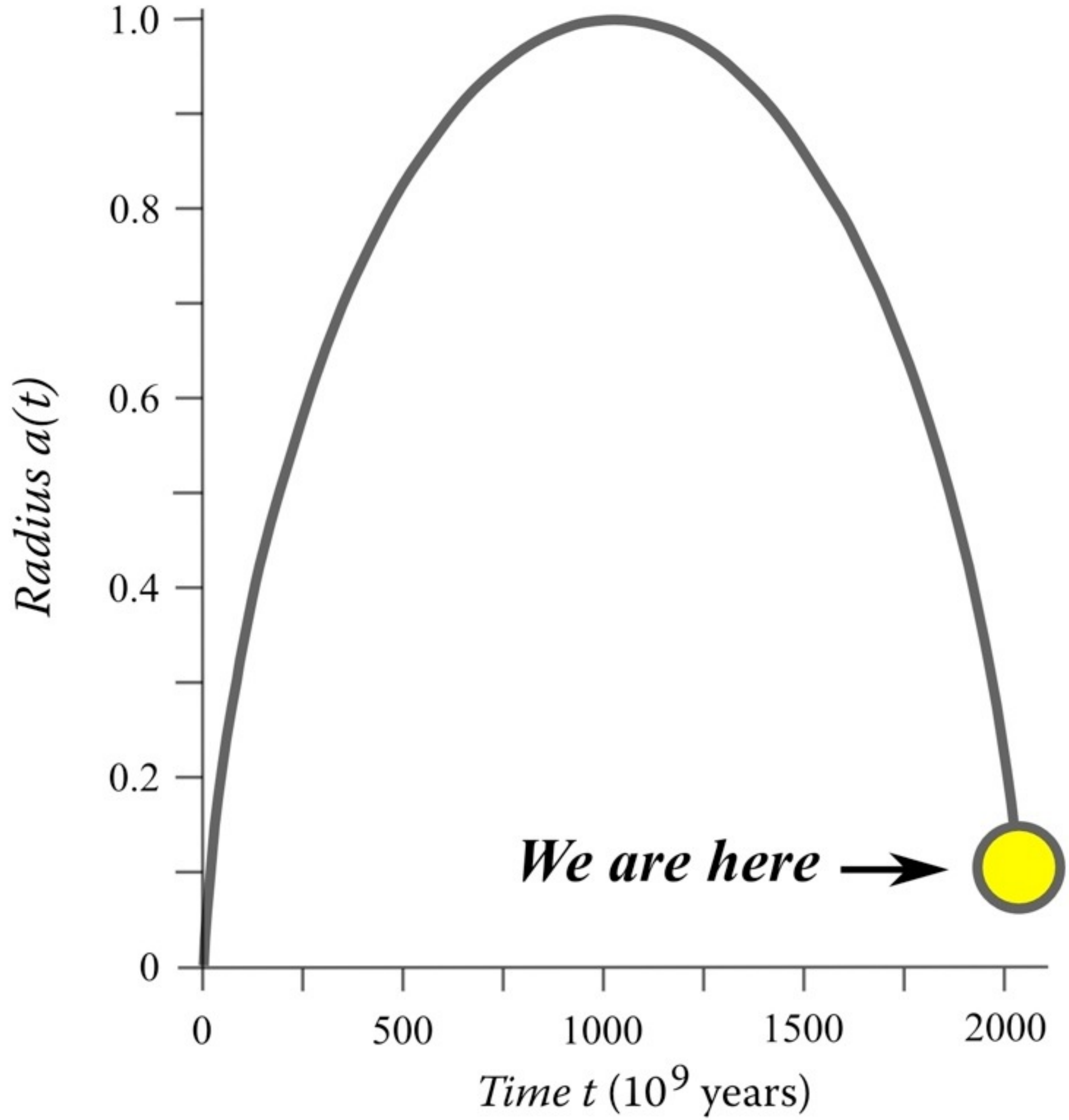
SN fit using Friedmann (1922)
46
44
42
40
38
36
34
m-M (mag)
0.01
0.1
1
redshift
Fit assumes a closed, collap
and gives H_o= -66.6 a
q_o ≳ 0.5
arXiv:astro-ph/00083
http://katoon.org/stp
Supernova data http://goo.gl/F8fow
Reported SN data error average = 0.231
This RMS fit = 0.234


q_0 decreases

Hubble Ultra Deep Field 2012 *Hubble Space Telescope* WFC3/IR



NASA and ESA STScI-PRC12-48a



Time to collapse
~9.5 billion years

A Simple Explanation of "Dark Matter"

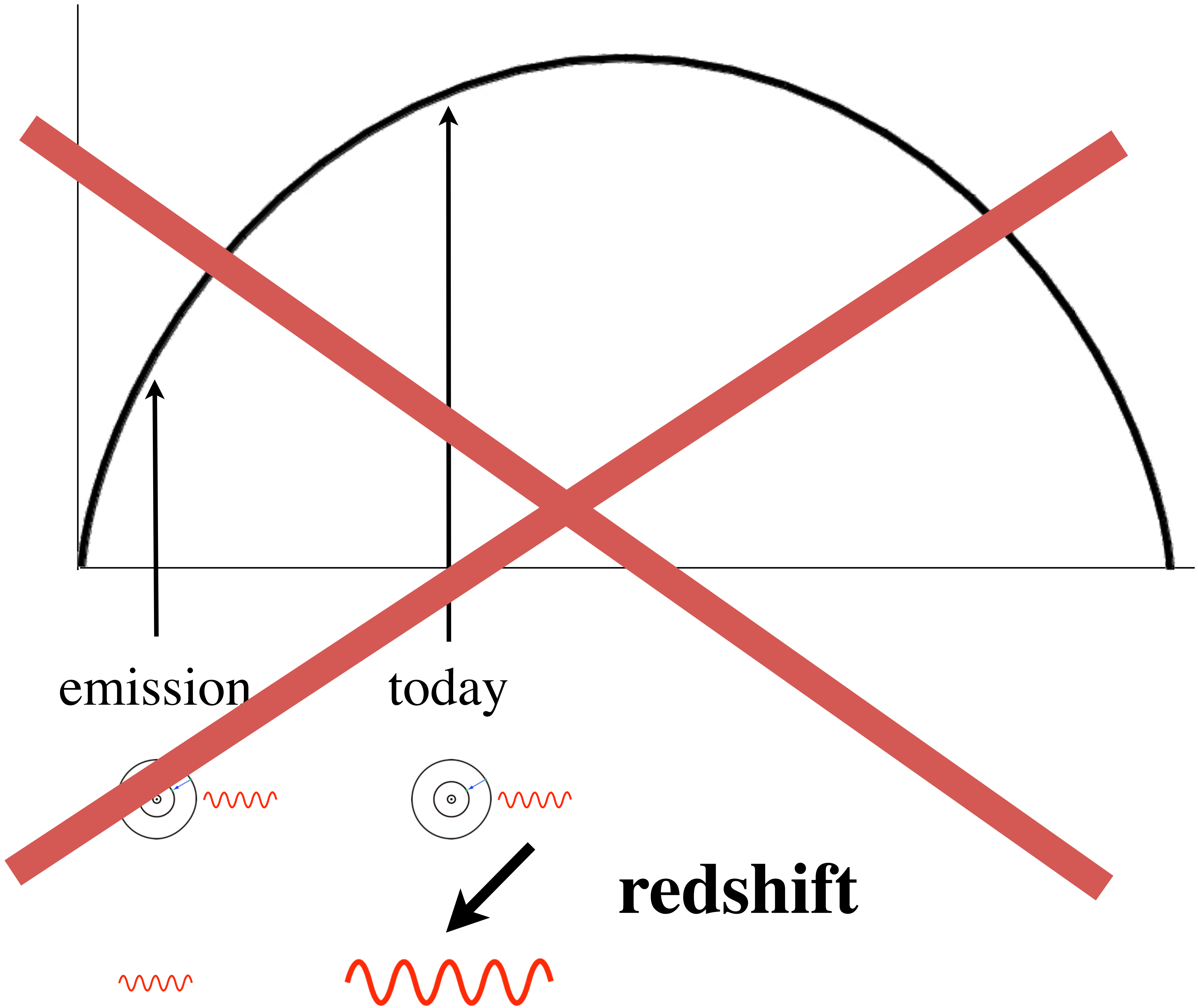
- The universe is at least 2000 billion years old.

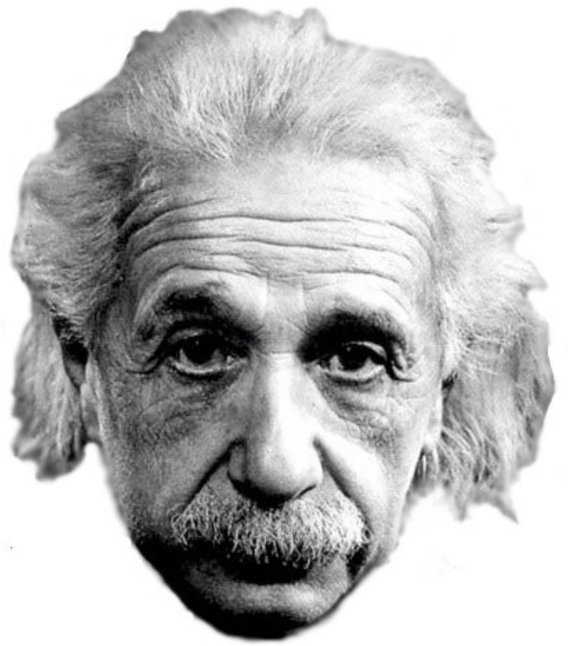
- The lifetime of our sun, an average star, is estimated to be of the order of 10 billion years.

- Stars began forming soon after the Big Bang. Those and most stars from the following 2000+ billion years have gone dark.

- This leads to the hypothesis that

- Most "Dark Matter" likely consists of burned-out stars.

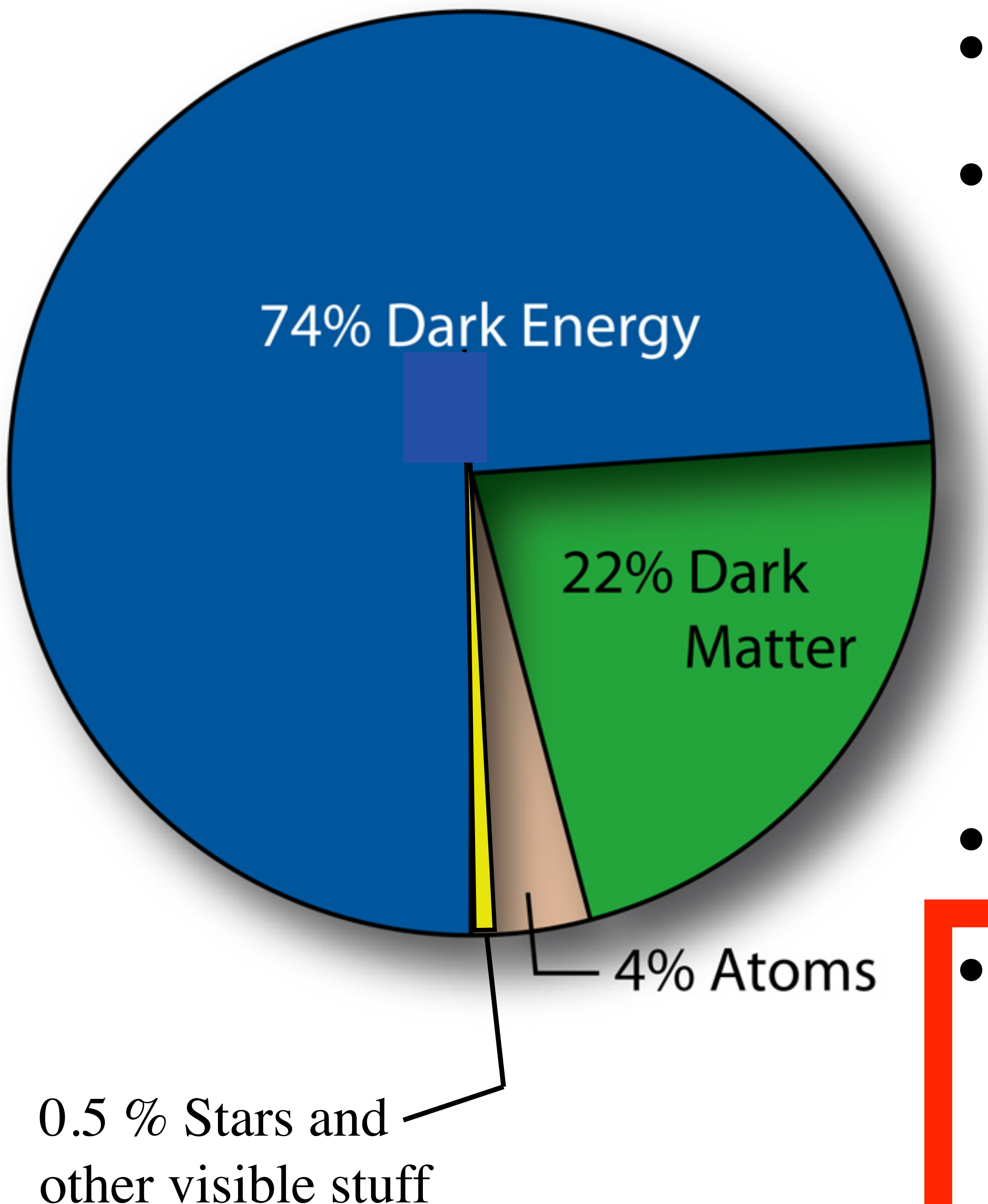

emission
today
redshift



(Curvature of geometry)   =   (Mass)

+ X

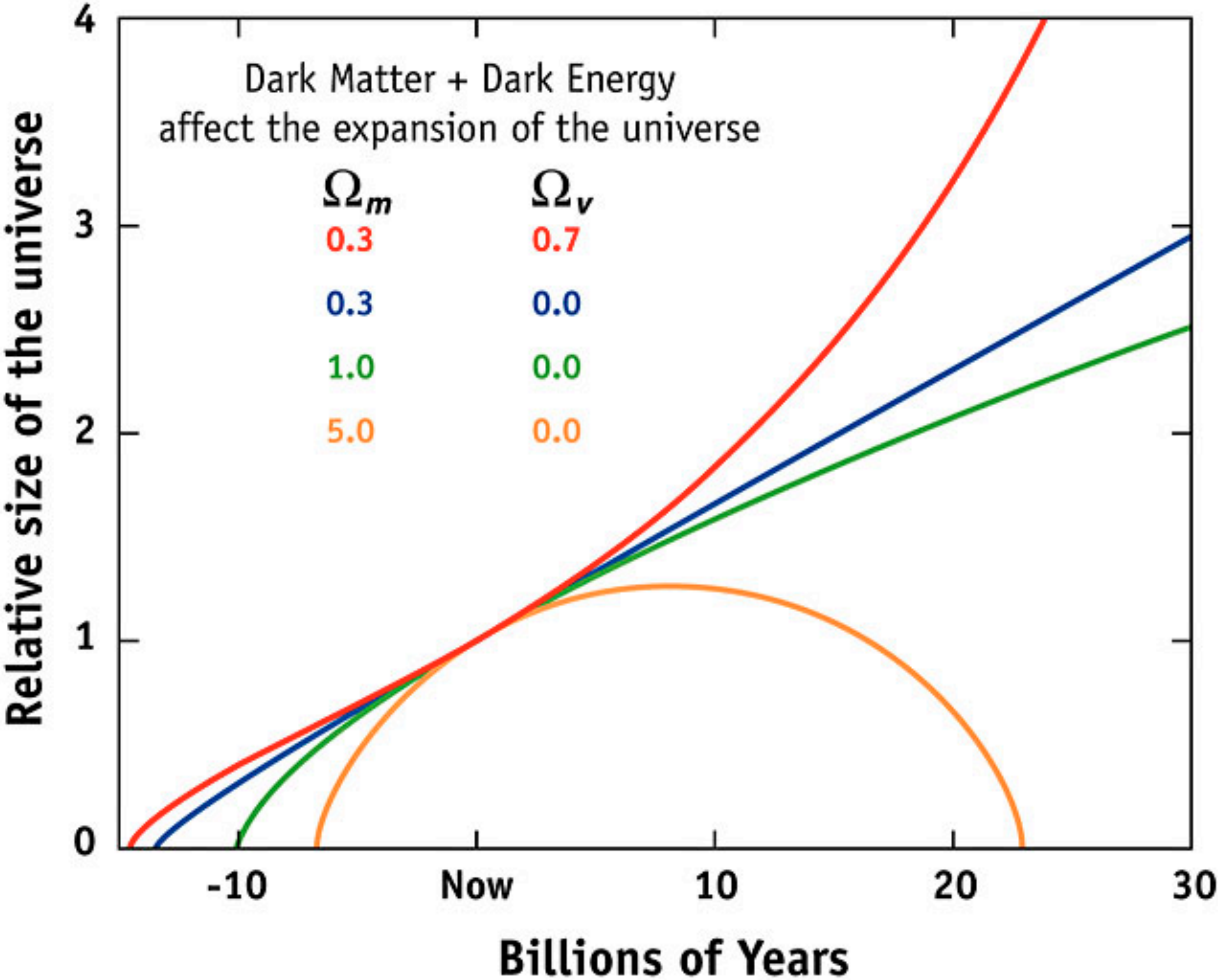
Contents of the Universe: Summary

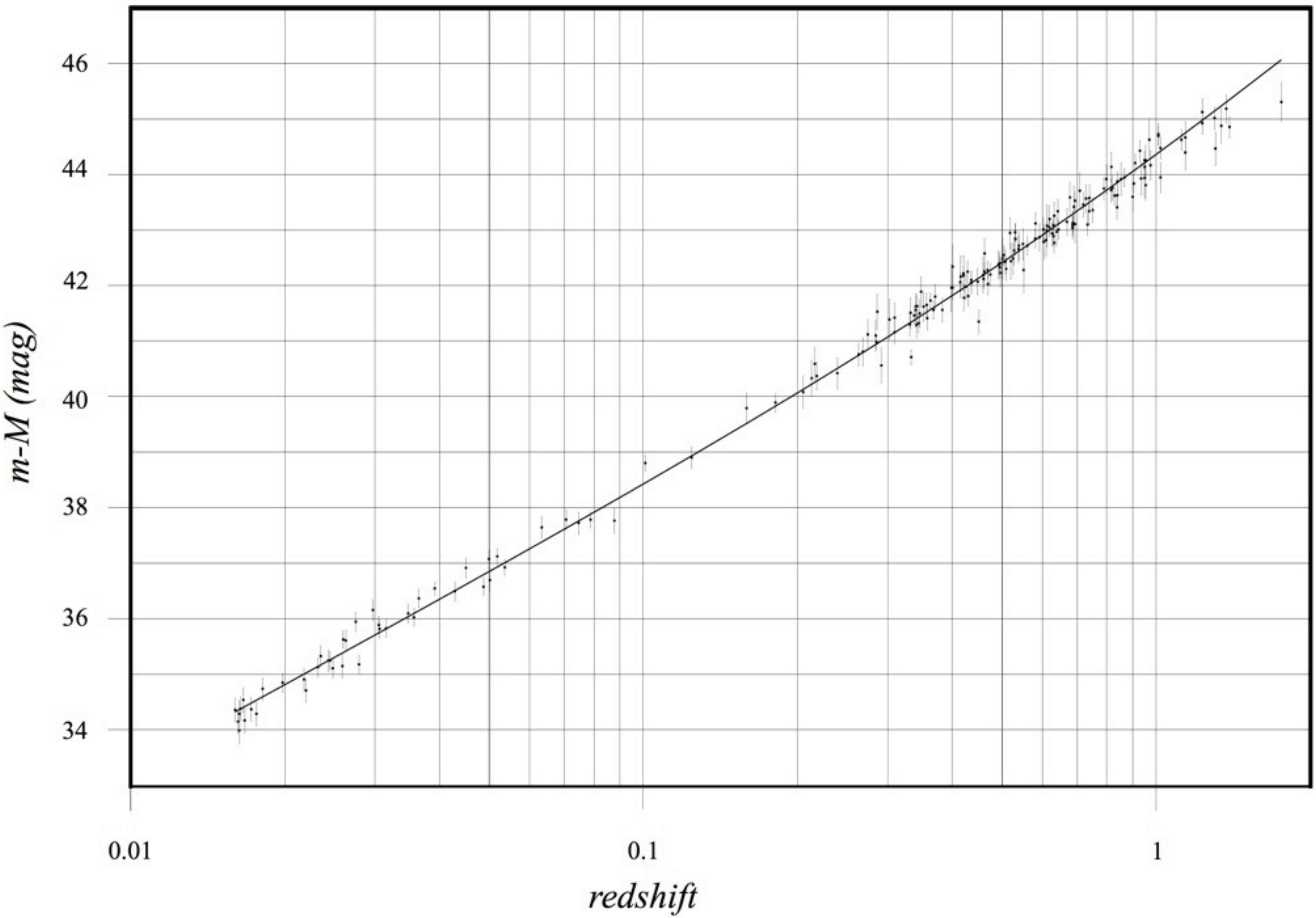


- $\Omega_0 = 1.00 \pm 0.02$
- $\Omega_m \approx 0.27 \pm 20\%$
  - $\Omega_b \approx 0.045 \pm 10\%$
    - Includes $\Omega_{visible} \approx 0.005$
  - $\Omega_{non\text{-}b} \approx 0.22$
    - Includes $\Omega_\nu < 0.005$
  - $\Omega_{CMBR} \approx 0.0001$
- $\Omega_{de} \approx 0.73 \pm 10\%$

- The physical nature of the DE is currently completely unknown

Matter Dominated Model

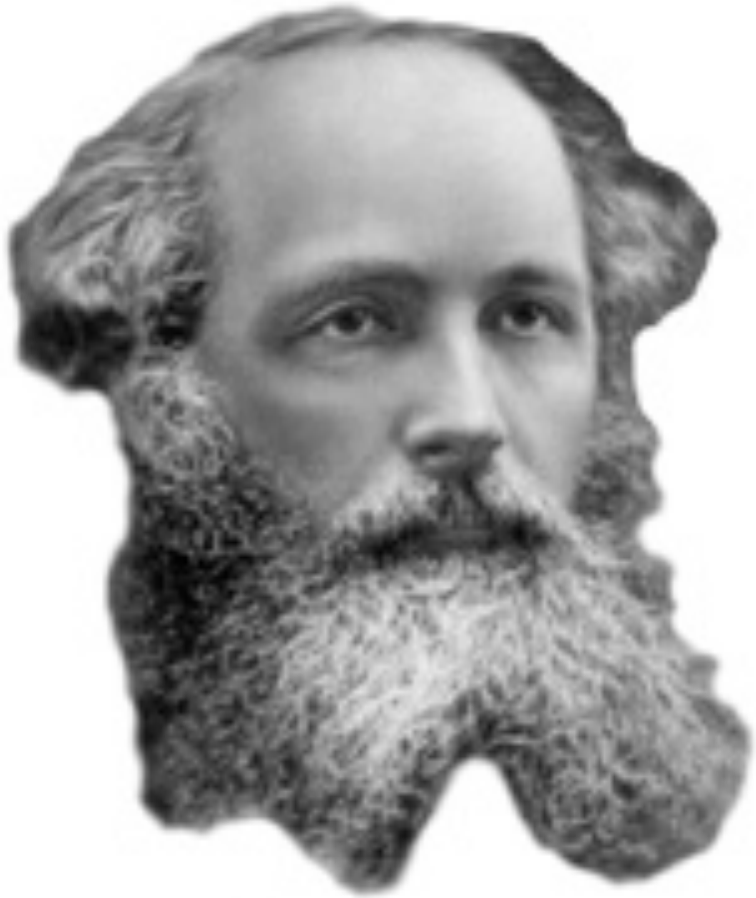
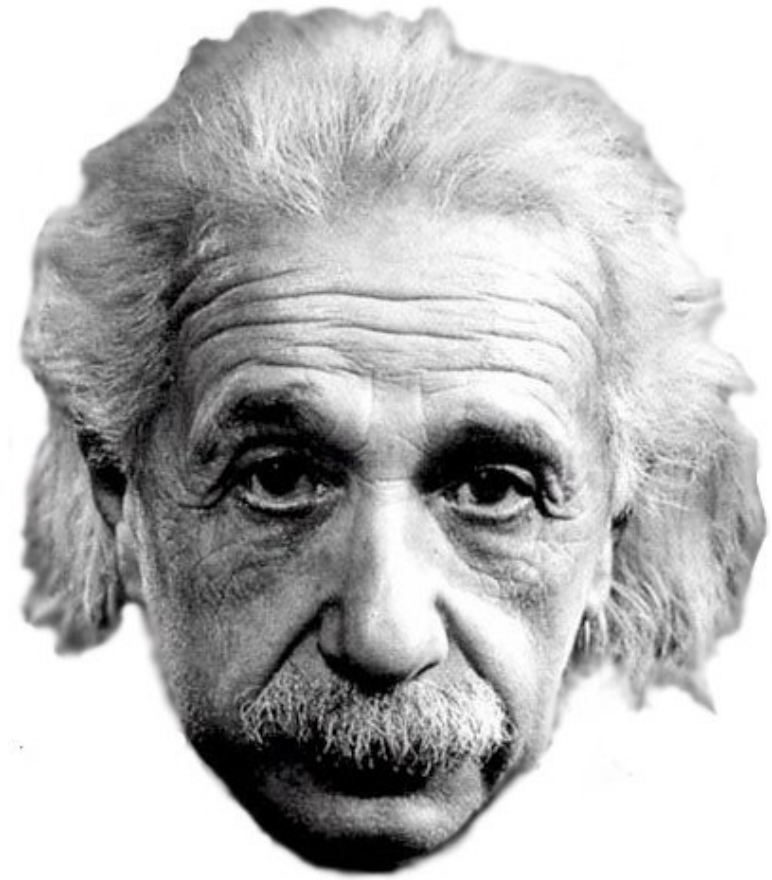


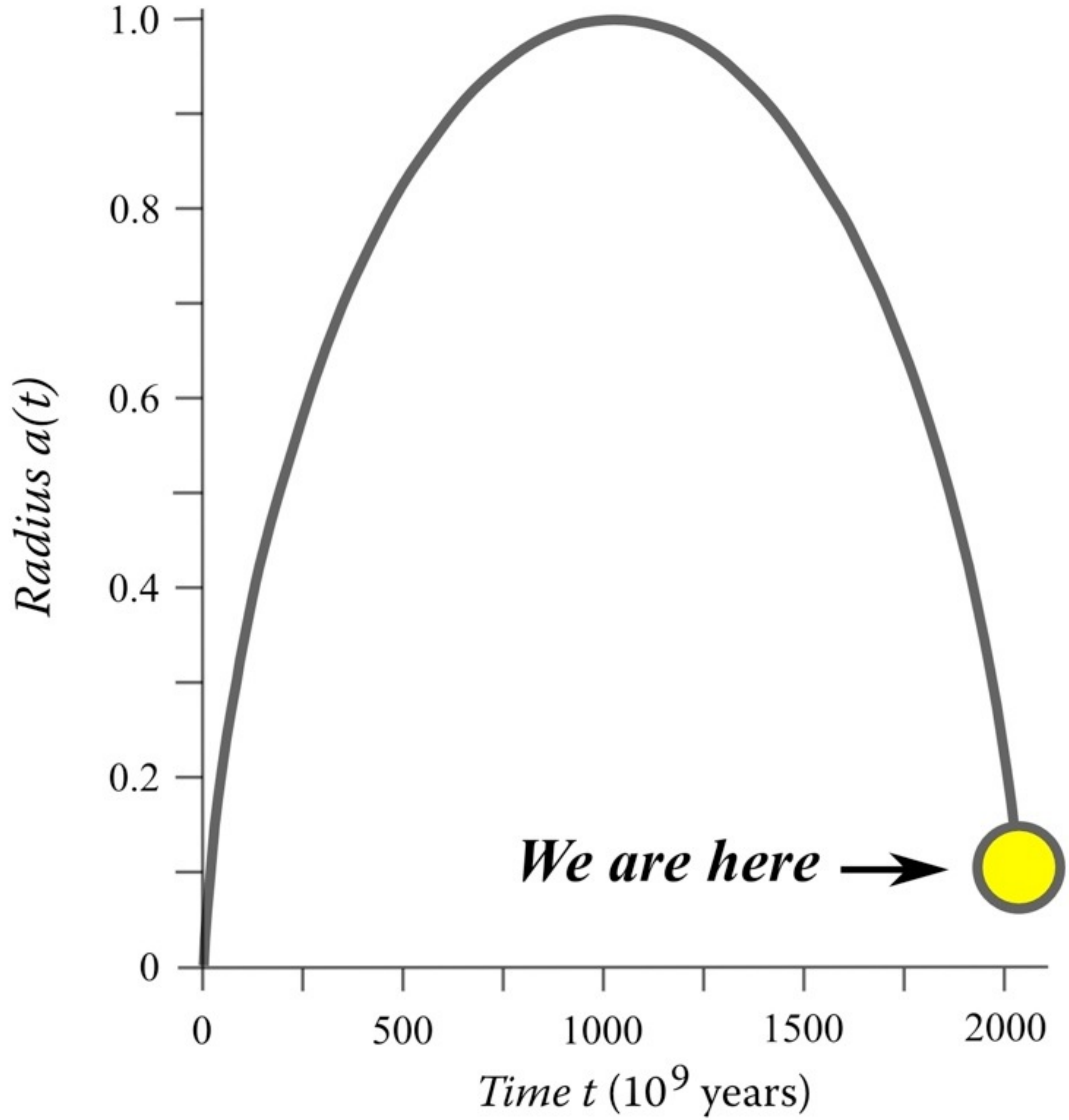


46
44
42
40
38
36
34
m-M (mag)
0.01
0.1
1
redshift

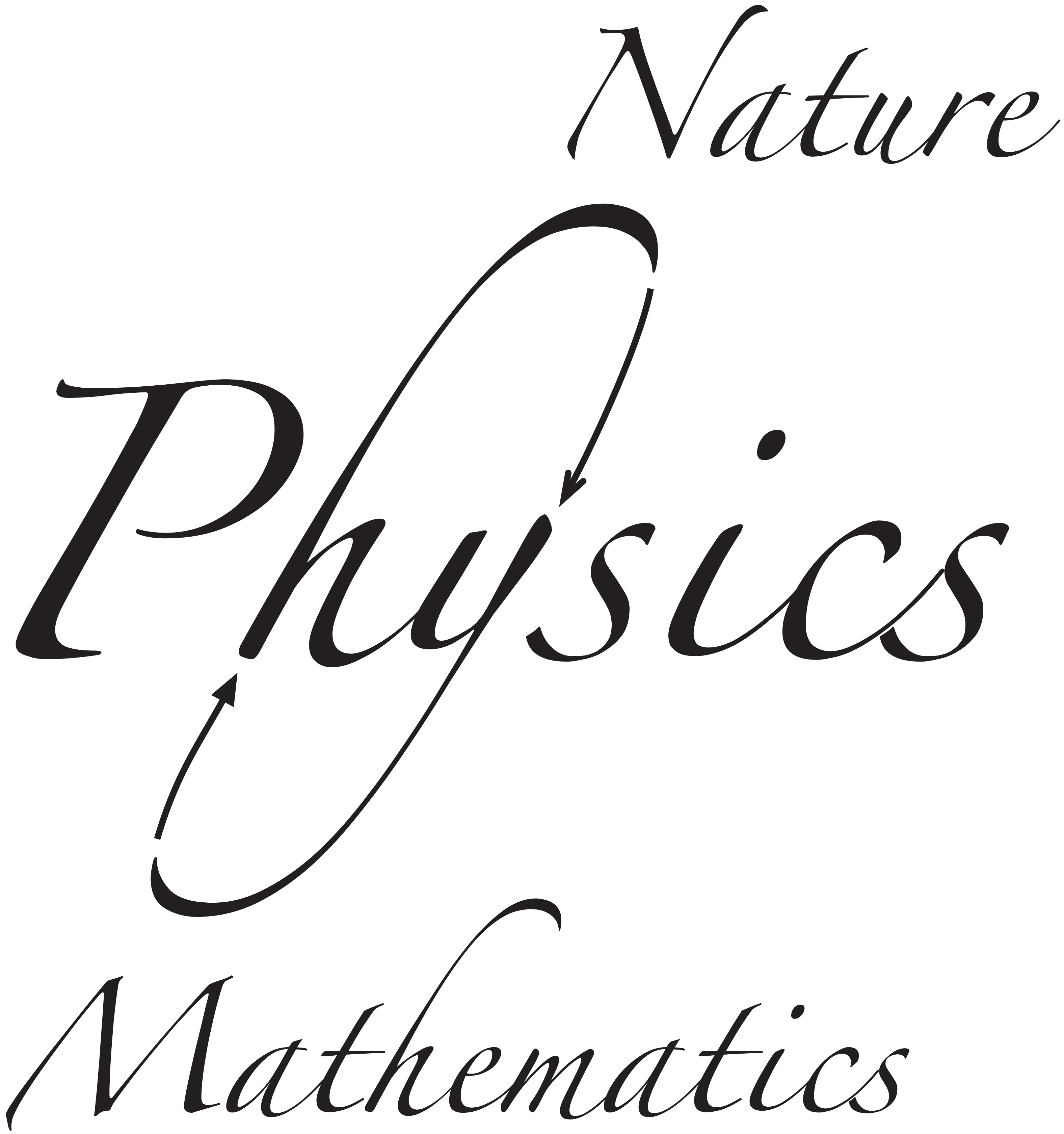
Which interpretation is “true” ?

Ignoring: Is either interpretation “true” ?



Time to collapse
~9.5 billion years


Nature
Physics
Mathematics

The Collapsing Universe

Understanding "accelerating redshifts"
using physics from the 1920's

katoon.org

ON THE VARIATION IN THE SPEED OF LIGHT IN SCHWARZSCHILD AND FRIEDMANN GEOMETRIES

W. Q. SUMNER[1]

Draft version May 25, 2014

ABSTRACT

Einstein (1907) studied Maxwell's equations in an accelerated coordinate system. He found that these equations are exactly the same as they are in the inertial systems of special relativity except that the speed of light is reduced. Einstein assumed that acceleration is locally equivalent to a gravitational field. This implies that the speed of light is also reduced by gravitation. A reduction in the speed of light is equivalent to a decrease in the strength of electrical fields. The exact relationship derived later for this decrease using general relativity is important to the interpretation of physical measurements of photon redshift. The properties of both atoms and photons may change with location or change in time. In Schwarzschild geometry, comparing changes in atoms and photons at different distances from the gravitating source reproduces Einstein's well-tested redshift formula. In the closed Friedmann solution to general relativity without a cosmological constant, comparing changes in atoms and photons at different times proves that the Hubble redshift observed can occur only during contraction, never during expansion. The superb theoretical fits to observed supernovae redshifts that result eliminate the need to postulate dark energy. These redshifts show that the universe is very nearly flat and will collapse in about 9.6 billion years. High-*z* redshift observations up to 11.9 imply that the universe is at least 2000 billion years old, more than a hundred times greater than a typical star's lifetime. This makes it likely that