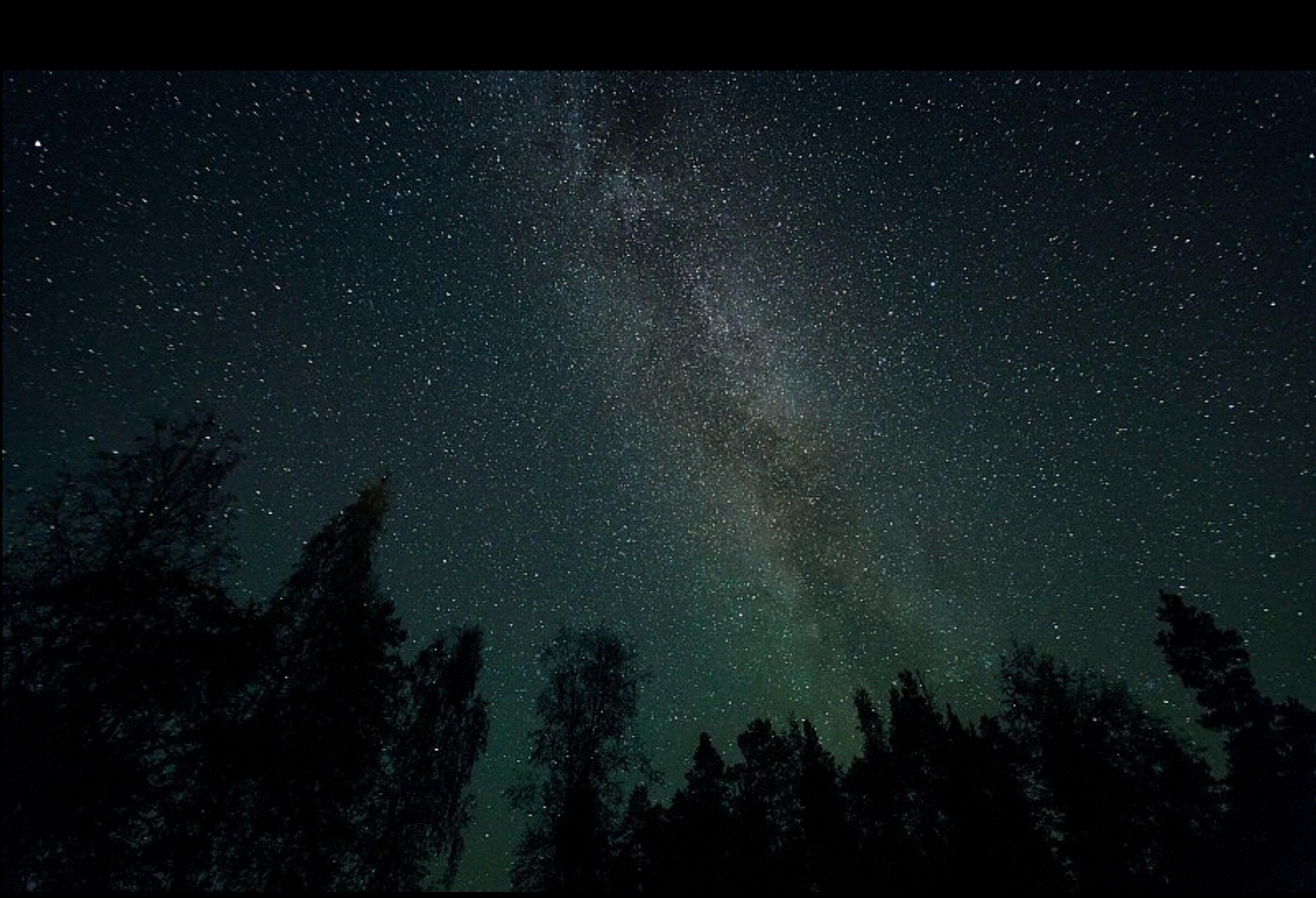




HISTORIA DEL UNIVERSO

EDUARDO OJERO PASCUAL, ESAC



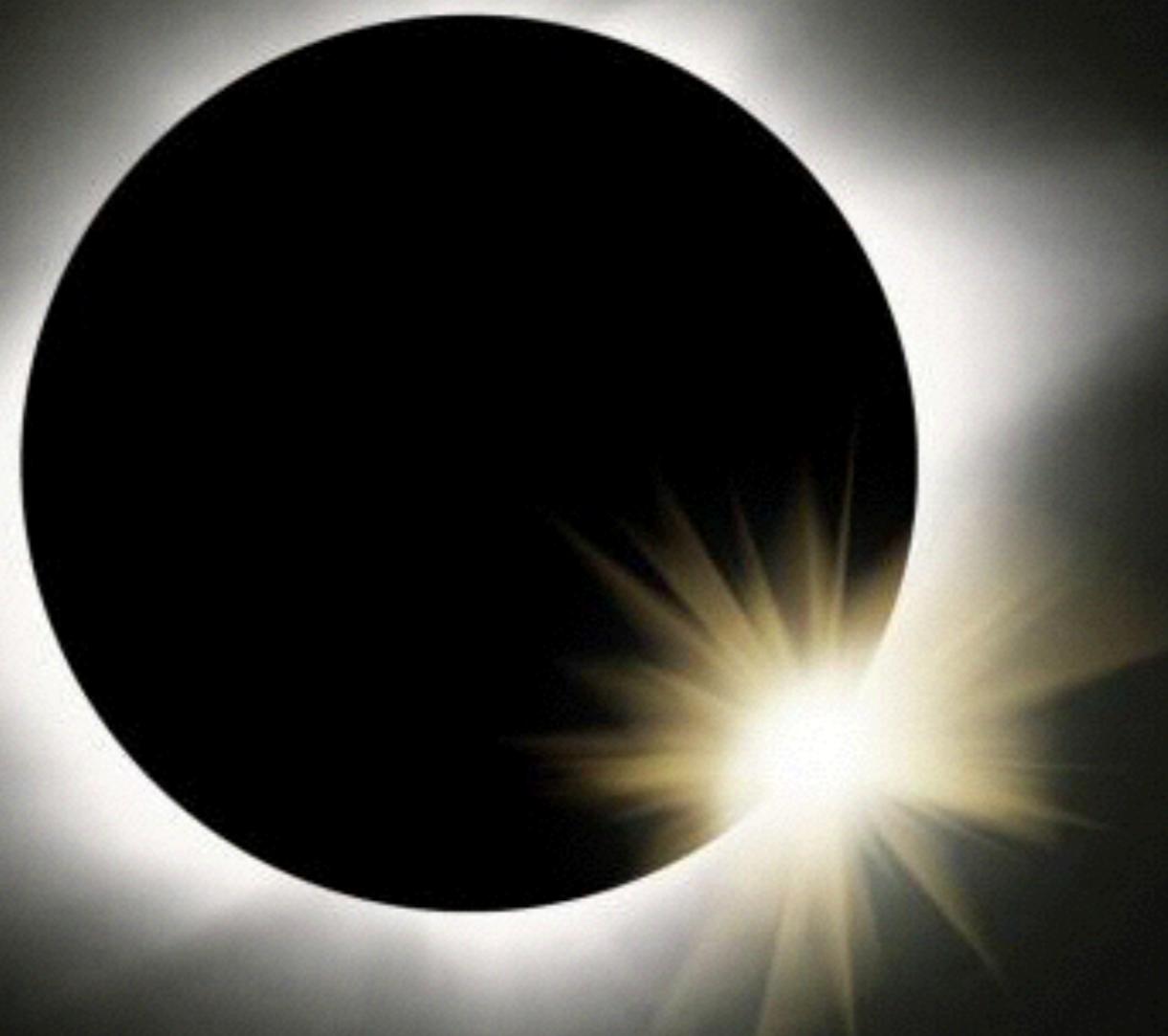


© Mark Unrau 2009



© Miguel Claro





ECLIPSE DE SOL

COMETA MACNAUGHT 2007





ECLIPSE DE LUNA



Stonehenge





mysticrealms.org.uk

Stonehenge: Salida del Sol en el Solsticio de Verano



Newgrange, Ireland



Newgrange Winter Solstice - Dec. 21st 2007 ©Ken Williams

Sírius (α CMa) - HIP 32349

Magnitud: **-1.45** (B-V: 0.80)
Magnitud Absoluta: 1.44
AR/DEC (J2000): 6h48m34.7s/-14°59'49.5"
AR/DEC (de fecha): 3h12m19s/-21°36'31"
Ángulo horario/DE: 18h29m22s/-21°36'31"
Az/Alt: +112°18'37"/-4°39'00"
Tipo espectral: A0m...
Distancia: 8.60 años luz
Paralaje: 0.37921"

Procyon

Betelgeuse

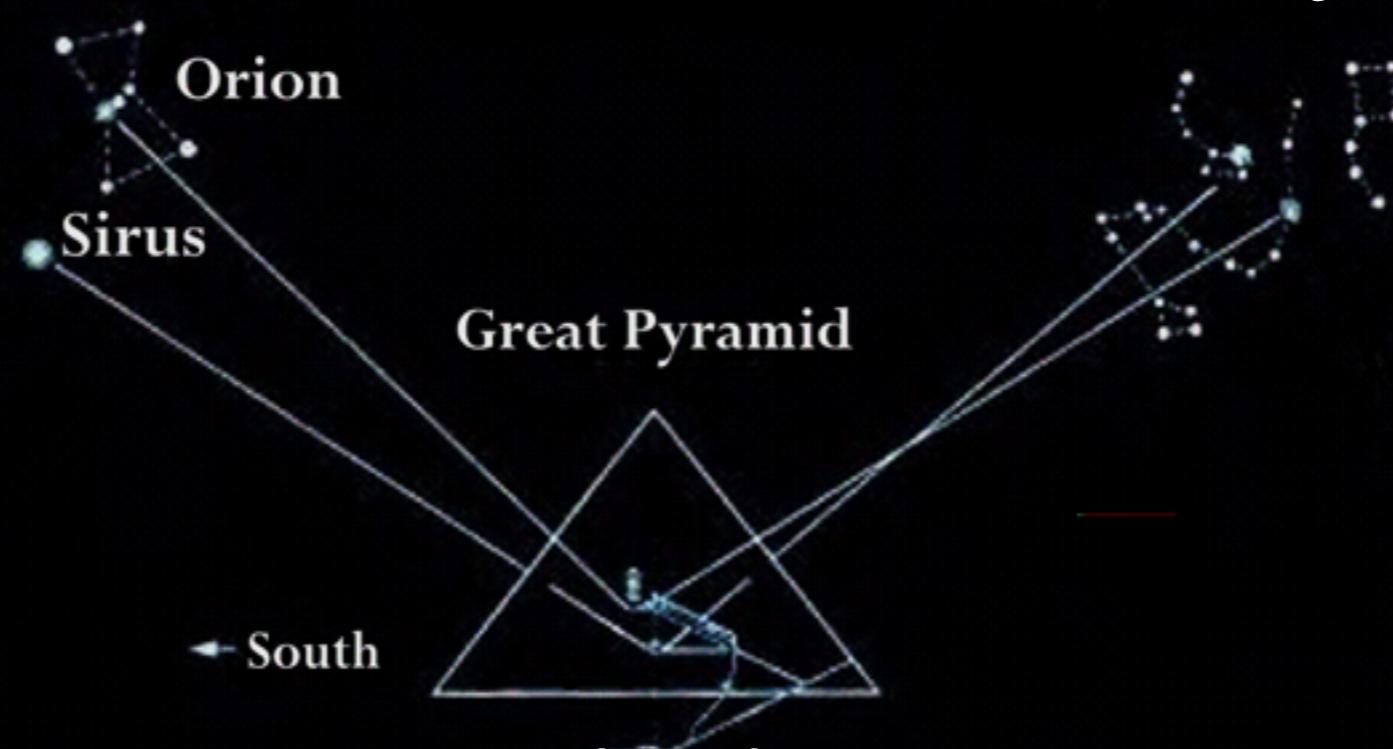
Rigel

E





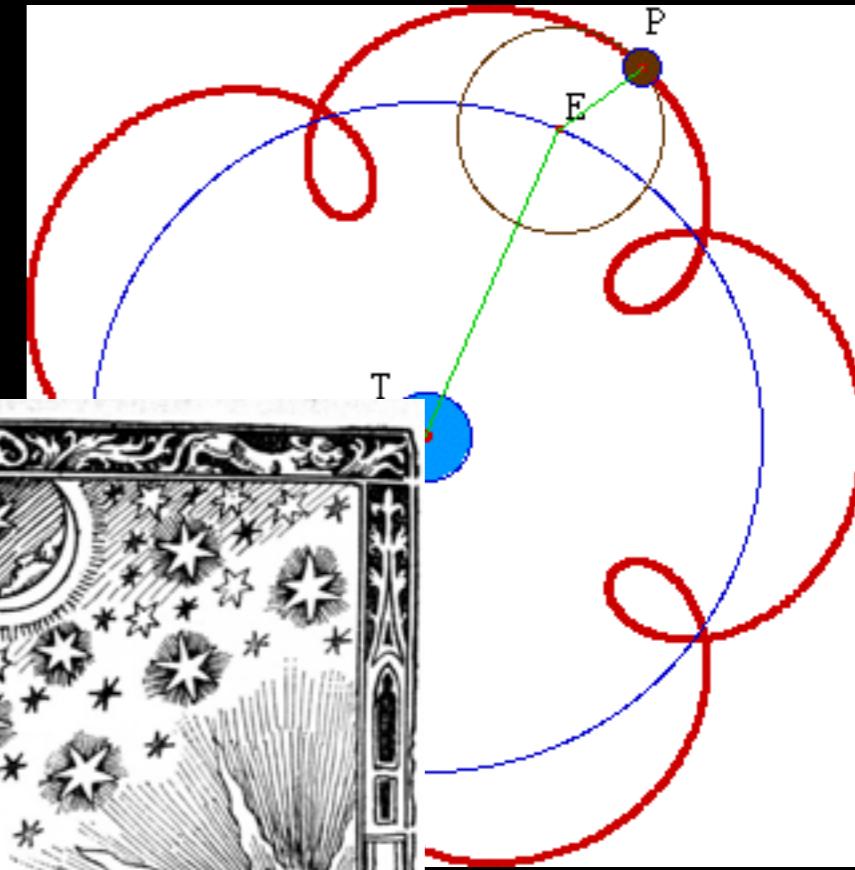
Reloj de Agua



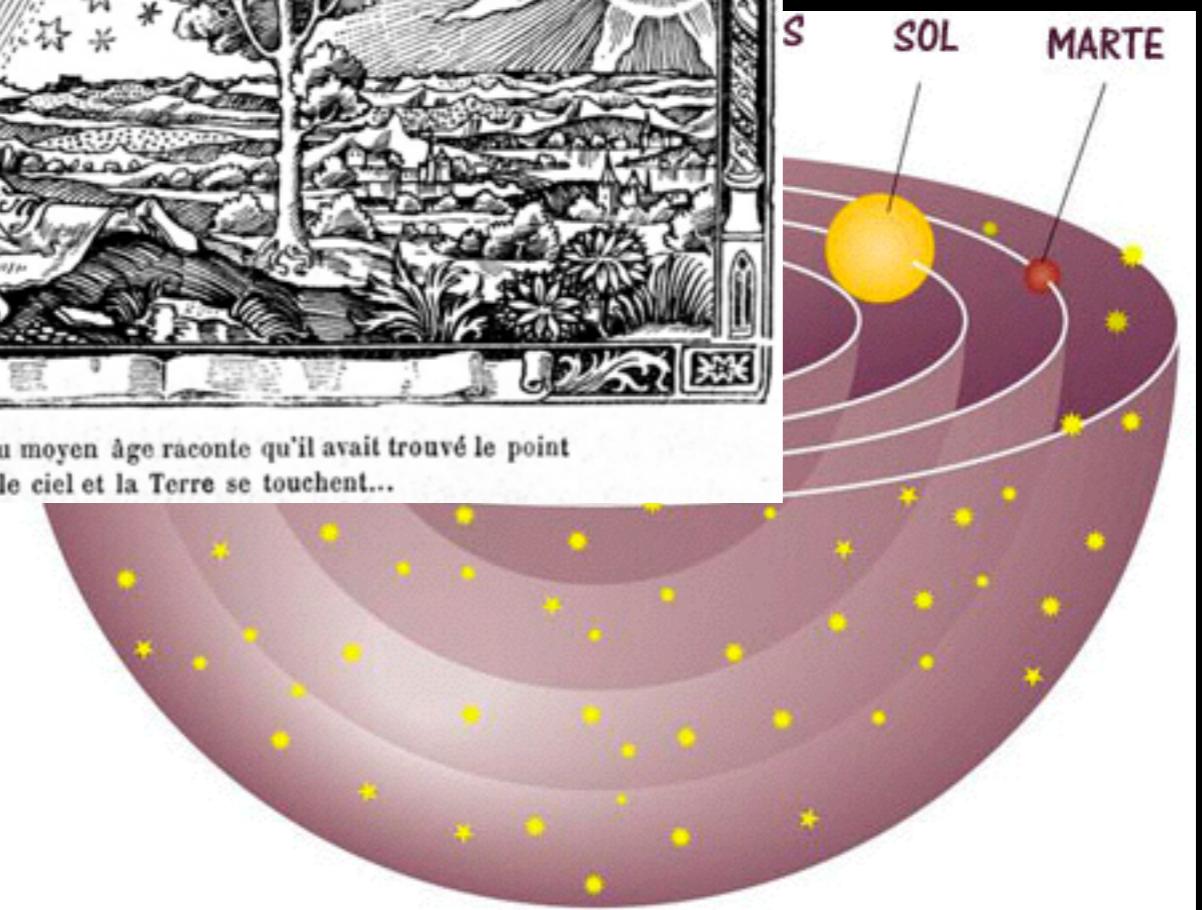
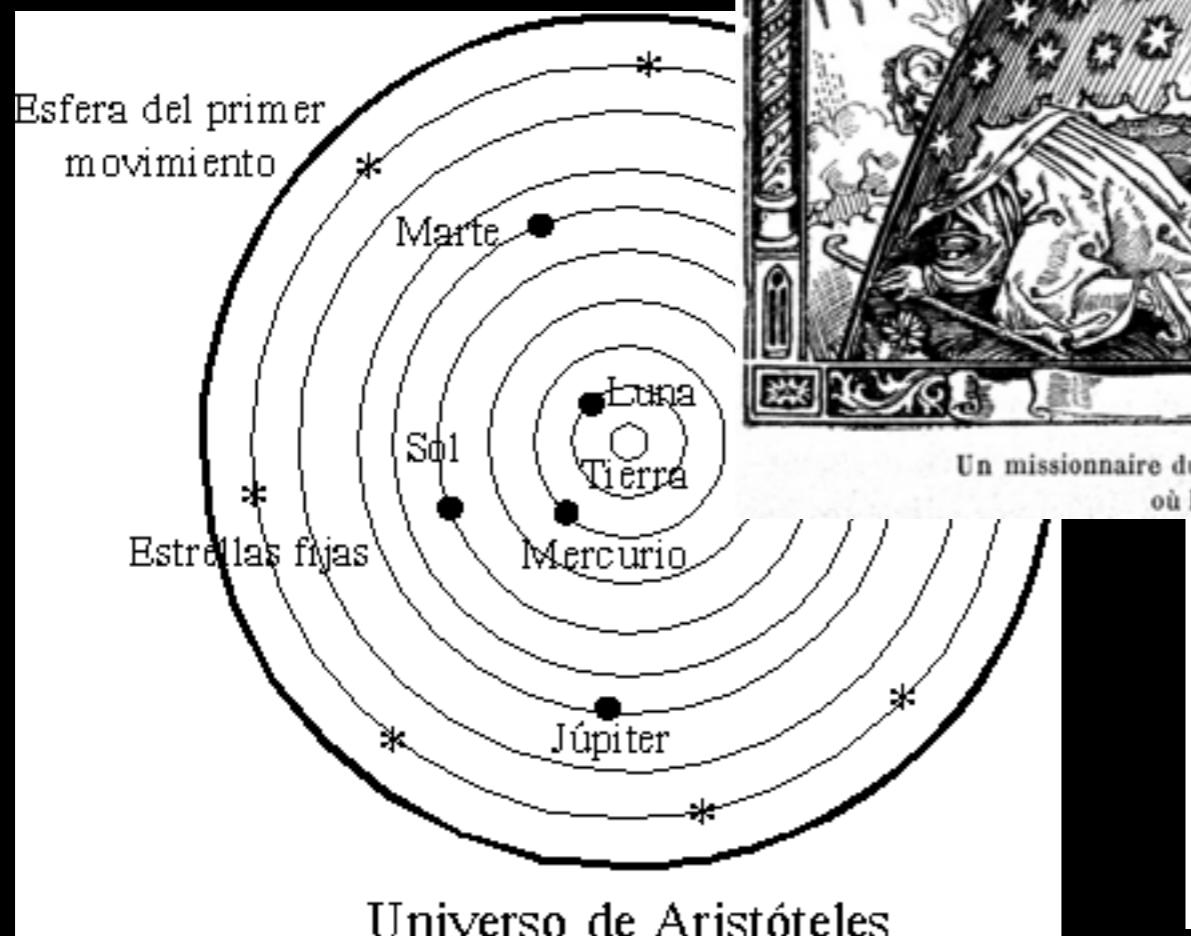
Pirámide de Giza



Hiparco

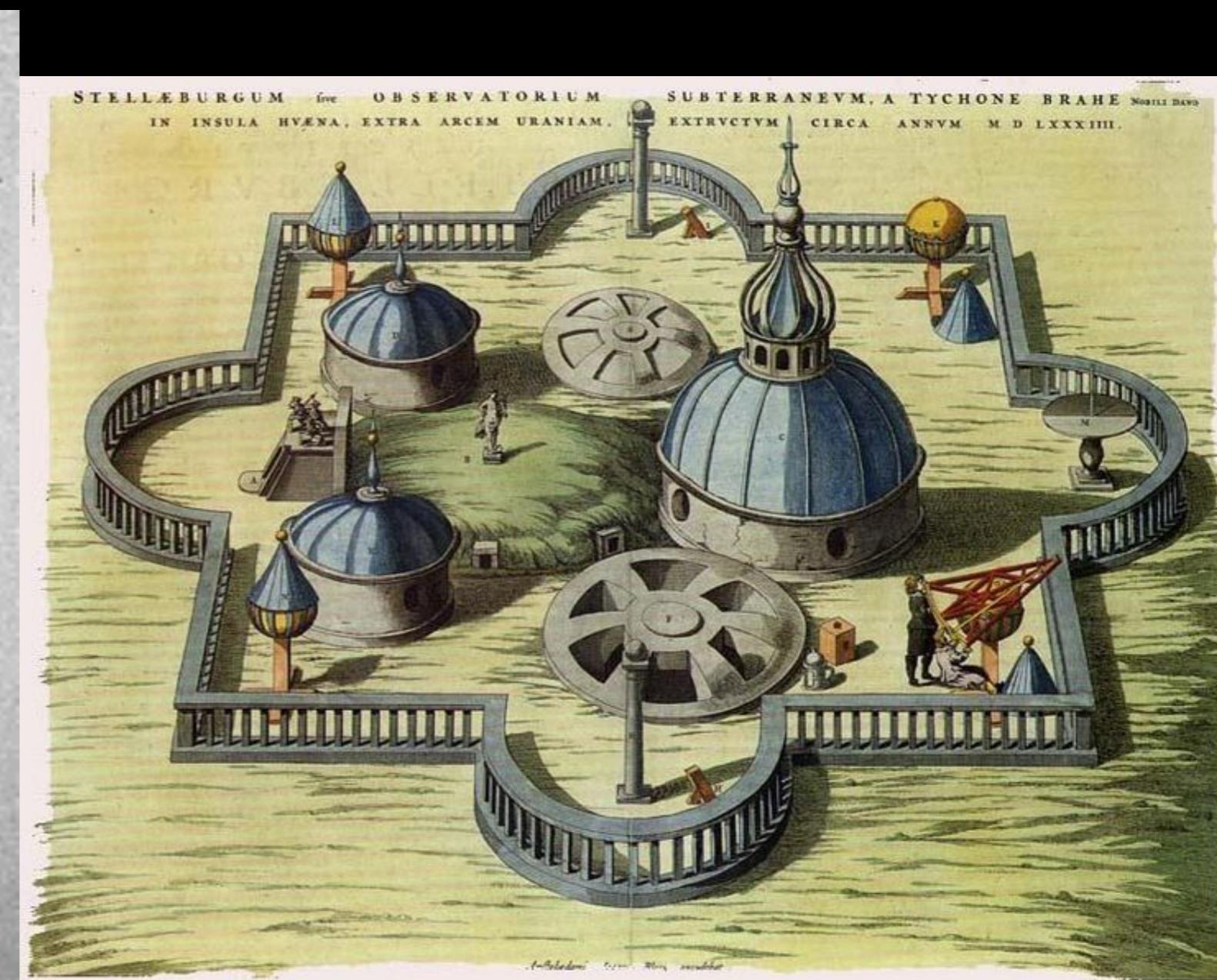


Ptolemaico

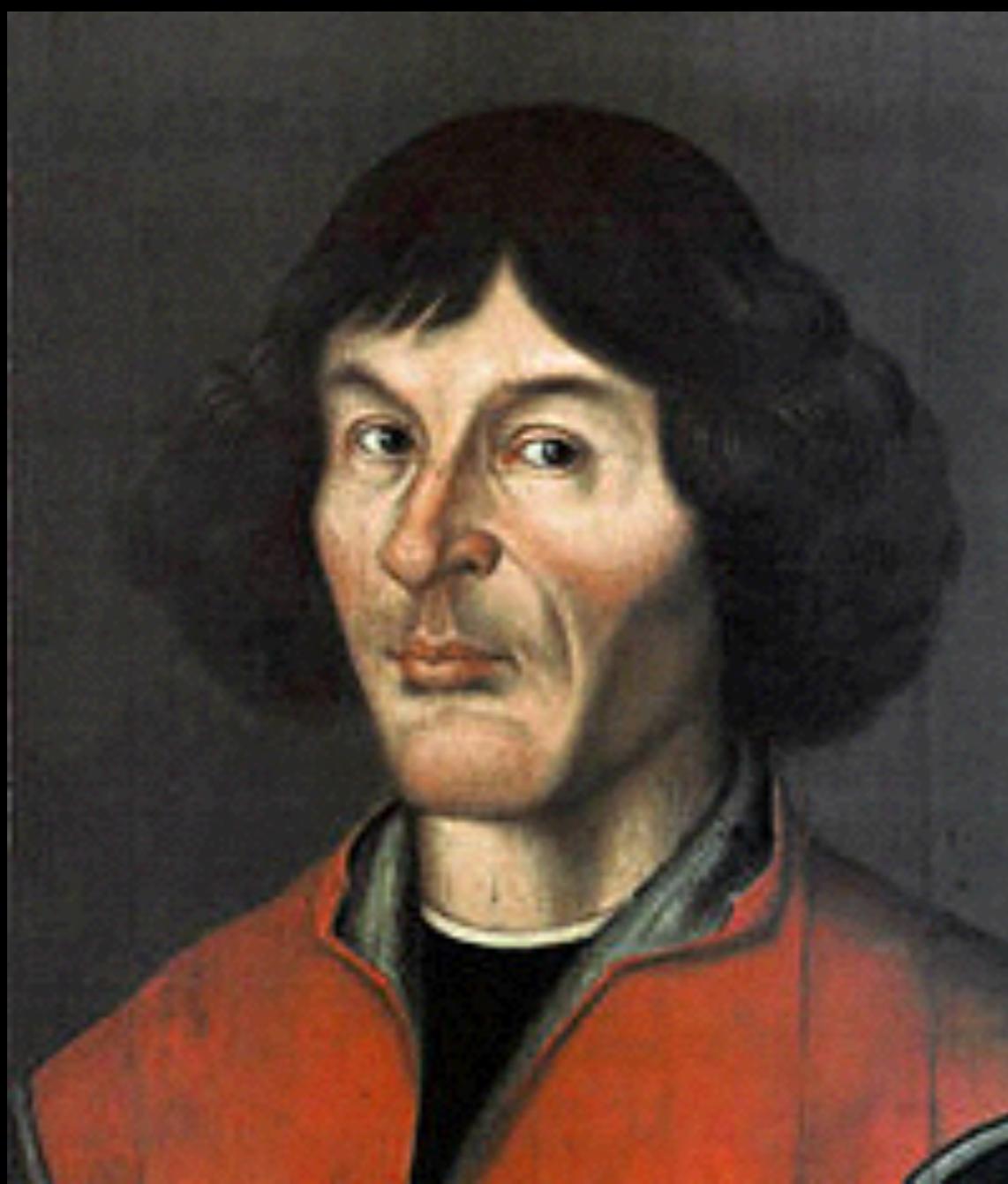




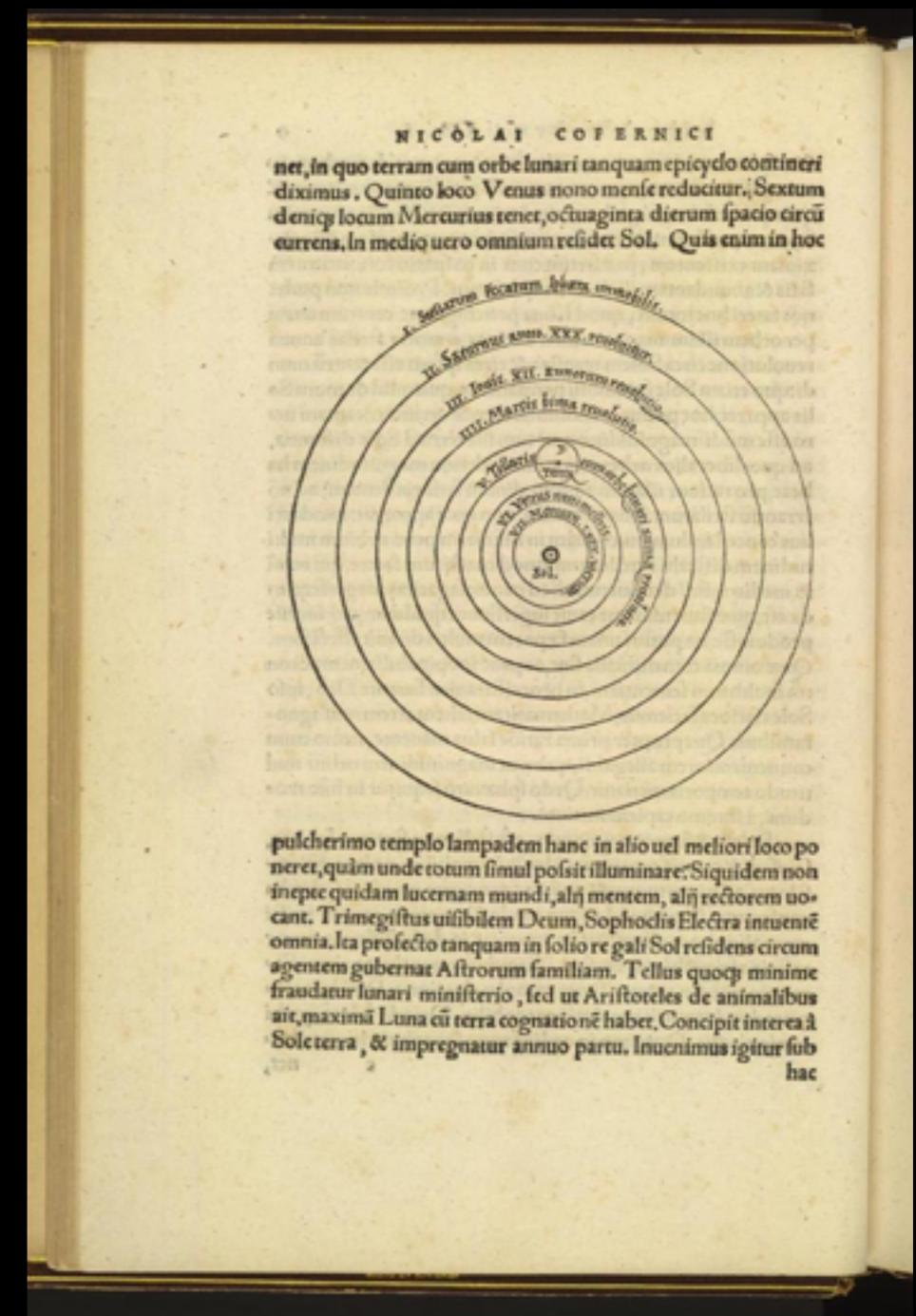
Tycho Brahe



Uraniborg, Isla de Hveen



Copérnico



De Revolutionibus



Kepler

Leyes Movimiento Planetario

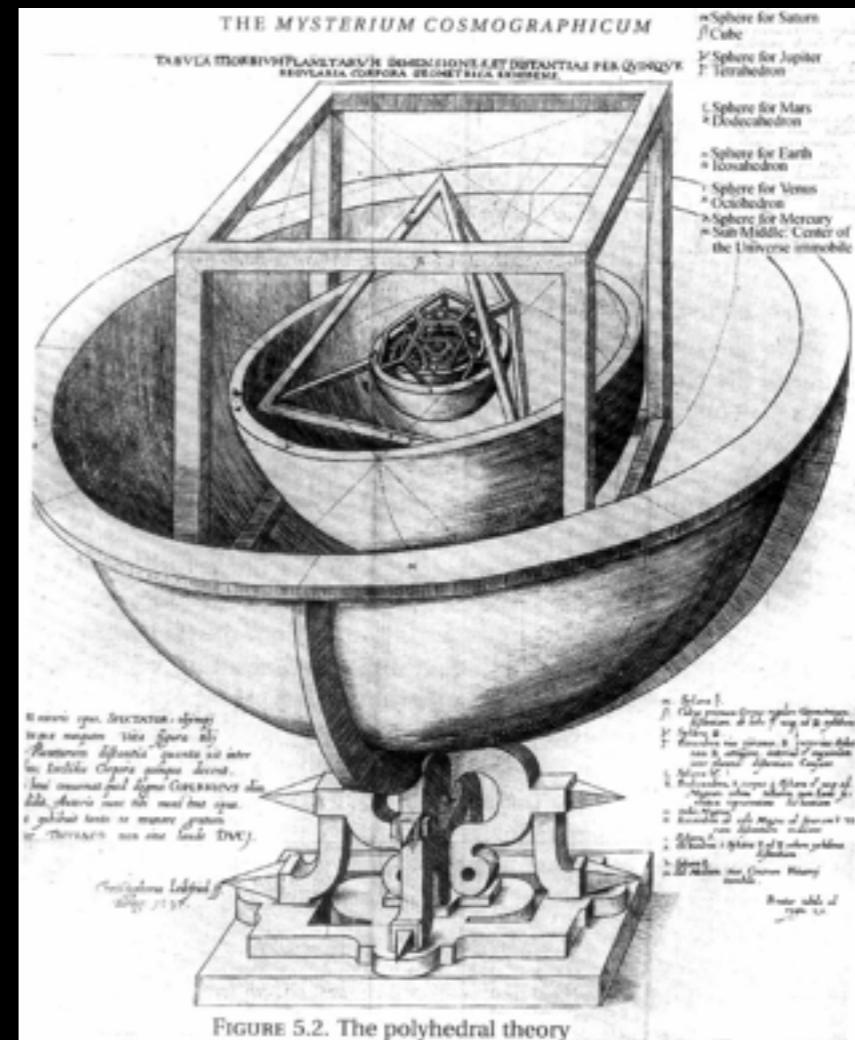
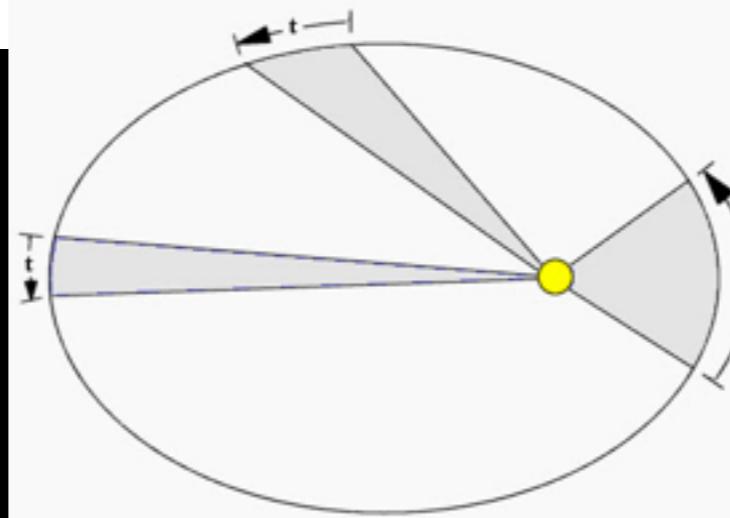
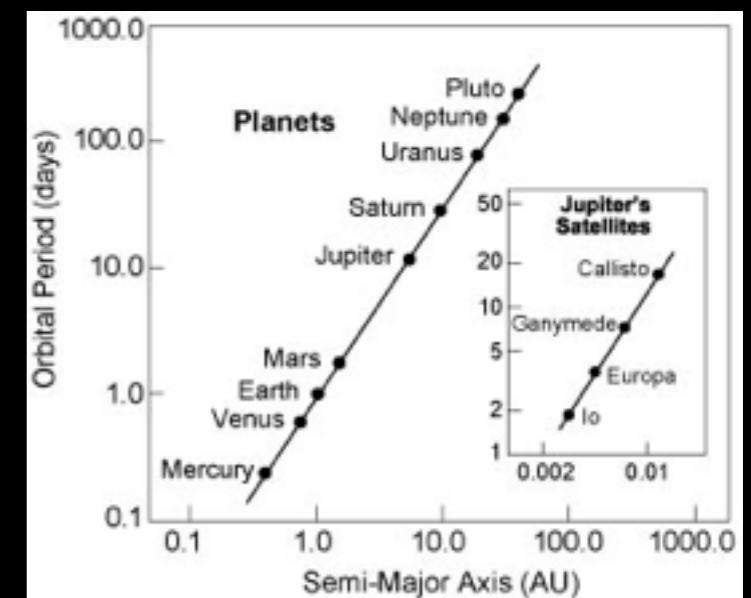
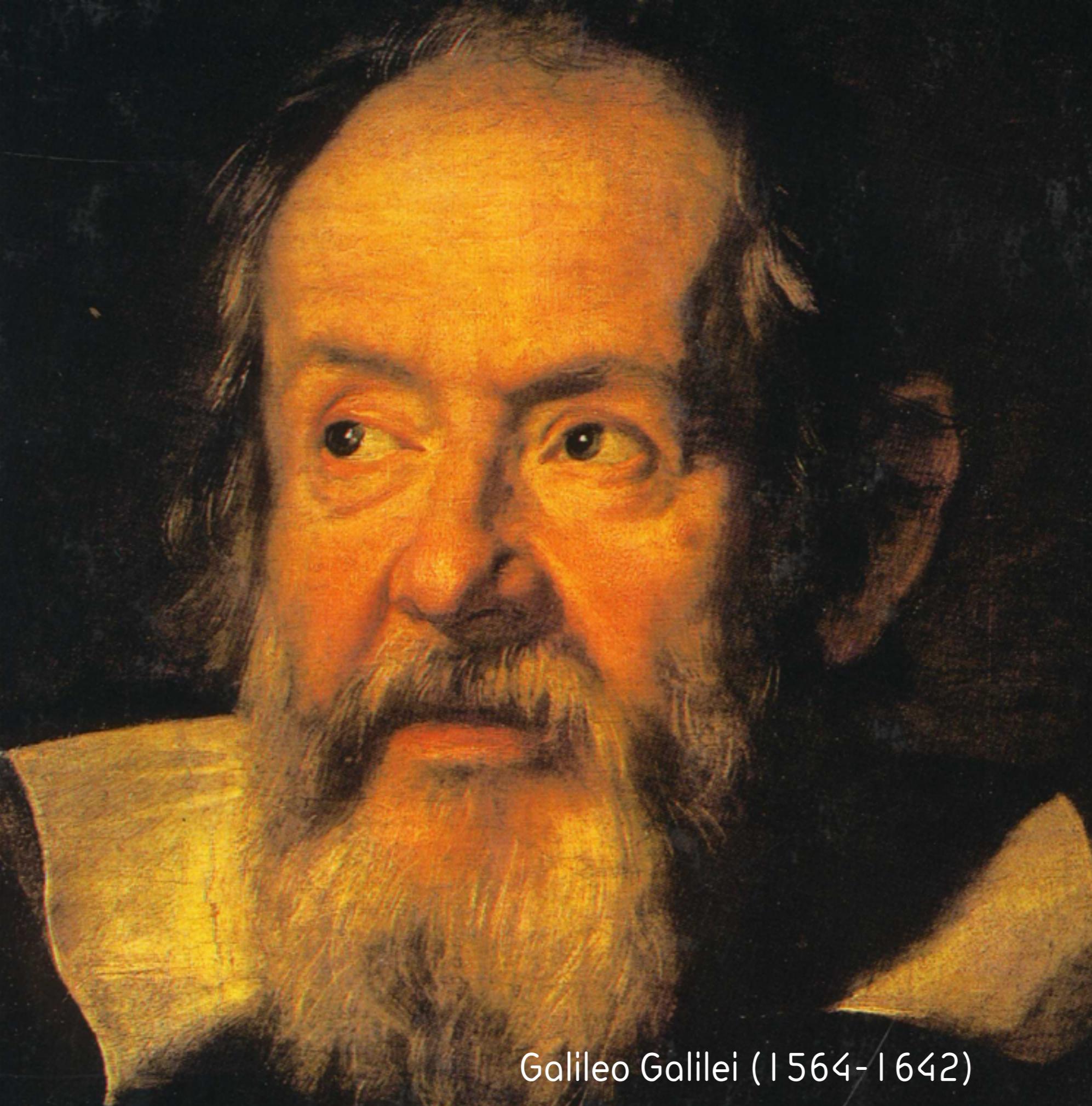


FIGURE 5.2. The polyhedral theory

Modelo Sistema Solar





Galileo Galilei (1564-1642)



S I D E R E V S
N V N C I V S

MAGNA, LONGE QVH ADMIRABILIA
Spectacula pandens, supradicenda jut proponens
vnicaque, praeclarum vero

PHILOSOPHIS, ac ASTRONOMIS, que
GALILEO GALILEO
PATRITIO FLORENTINO

Parusini Gymnasii Publico Mathematico

PERSPICILLI

Magni & brevi beneficiorum effigie in UNGUE PLATE, PISTILLI
NUMERI, LACTEO CIRPPIO, STELLIS RESPICUAS,

et propria via in

QVATVOR PLANETIS

Che IUVIS stellarum, diuinorum annularum, auctoris periodis, celestis
numerali circumferentia, quatuor, et novem, luna, vix
diam cognitis, sociisque Arctoris deponit,
hunc pietatis, atque

MEDICEA SIDERA
NVCYPANDOS DECREVIT.



VENETIIS, Apud Thomam Baglione, M D C X
Imprimere Petrus, G. Frangipani.



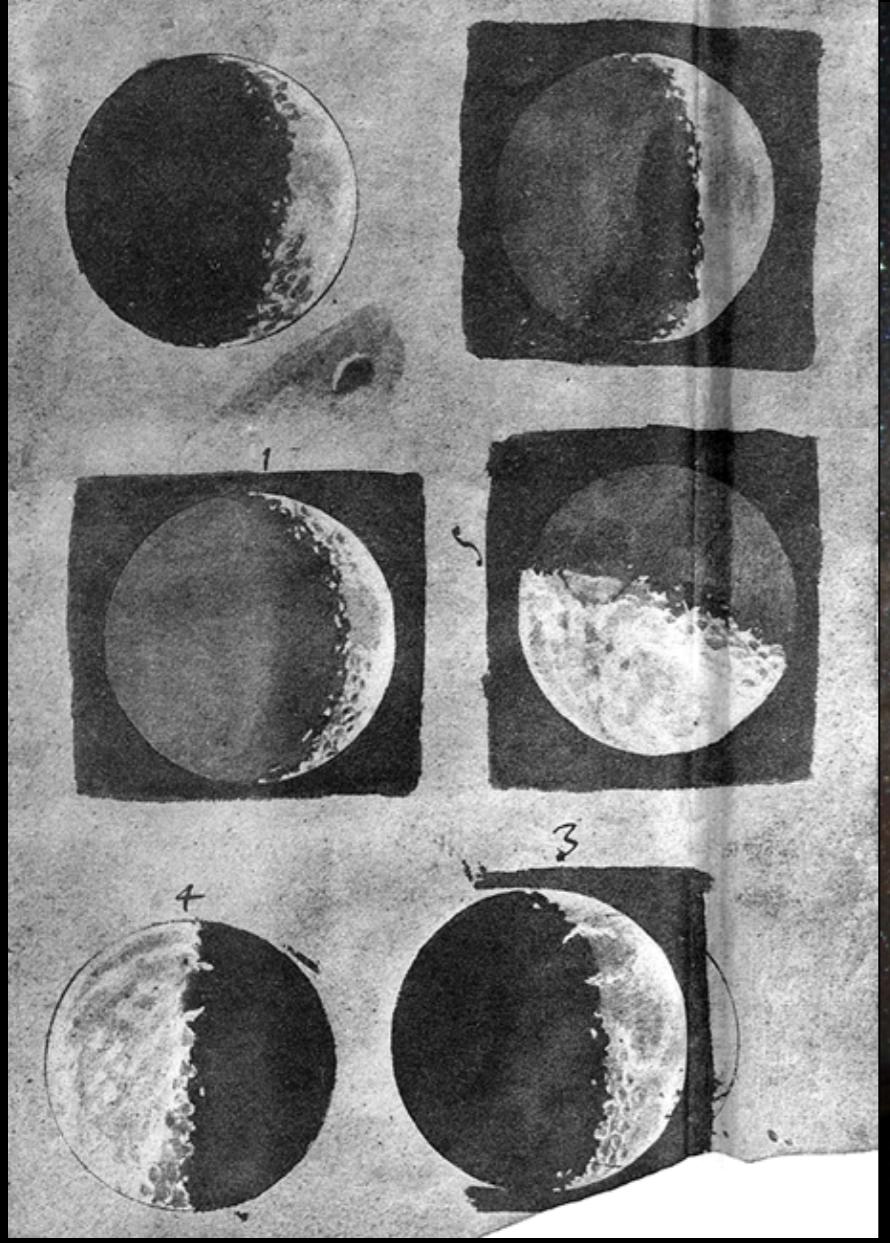
Jupiter y los 4 satélites Galileanos

S. m° Princ.

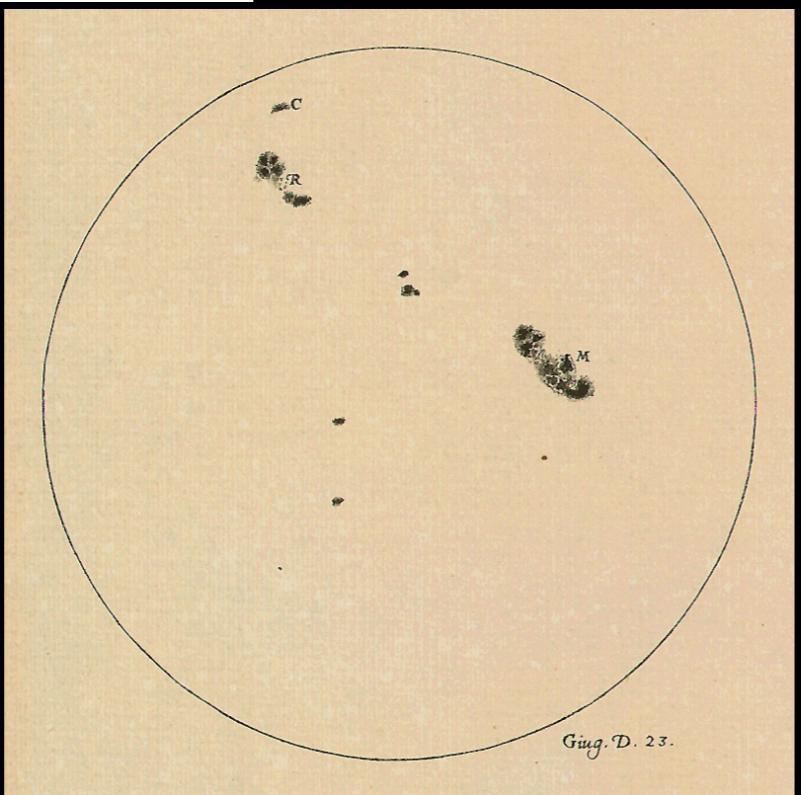
Gloria Galley Hamlet. Scena della Dr. V. in cui il Dr. veritudo, et lo spirito puro si trovano in un luogo sacro che non della storia. Si, Mademoiselle nella sua
voce di Padova,
Trovaro questo strumento d'invenzione al Signor Principe
D'Urbino et l'ho usato di frequenti insinuando che qui
regno et intreva veritudo e sincerita che da tempo non
trovai altrove ne l'aggio regno, et che la disposizione
di ciò l'ha fatto venire alle persone di spicolaria. Si
proposto ha l'ammiraglio di scrivere L'opere del Teatro dell'animis
et dei loro et per le quali prima di ogni parola noi et disappunto
d'un re et la qualita del quale giustificare la sua forte
bellatoris ette causa il ammiraglio o alla fuga, o pure una
nella strage scorsa niente et particolare. Distinguere ogni suo
moto de' progressamenti.

Al Signor D'Urbino

Scena prima. — * * * * *
Allo 8 min. — * * * * *
Allo 10 min. — * * * * *
Allo 12 min. — * * * * *
Allo 14 min. — * * * * *
Allo 16 min. — * * * * *
Allo 18 min. — * * * * *
Allo 20 min. — * * * * *
Allo 22 min. — * * * * *
Allo 24 min. — * * * * *
Allo 26 min. — * * * * *
Allo 28 min. — * * * * *
Allo 30 min. — * * * * *
Allo 32 min. — * * * * *
Allo 34 min. — * * * * *
Allo 36 min. — * * * * *
Allo 38 min. — * * * * *
Allo 40 min. — * * * * *
Allo 42 min. — * * * * *
Allo 44 min. — * * * * *
Allo 46 min. — * * * * *
Allo 48 min. — * * * * *
Allo 50 min. — * * * * *
Allo 52 min. — * * * * *
Allo 54 min. — * * * * *
Allo 56 min. — * * * * *
Allo 58 min. — * * * * *
Allo 60 min. — * * * * *
Allo 62 min. — * * * * *
Allo 64 min. — * * * * *
Allo 66 min. — * * * * *
Allo 68 min. — * * * * *
Allo 70 min. — * * * * *
Allo 72 min. — * * * * *
Allo 74 min. — * * * * *
Allo 76 min. — * * * * *
Allo 78 min. — * * * * *
Allo 80 min. — * * * * *
Allo 82 min. — * * * * *
Allo 84 min. — * * * * *
Allo 86 min. — * * * * *
Allo 88 min. — * * * * *
Allo 90 min. — * * * * *
Allo 92 min. — * * * * *
Allo 94 min. — * * * * *
Allo 96 min. — * * * * *
Allo 98 min. — * * * * *
Allo 100 min. — * * * * *



Cráteres Lunares



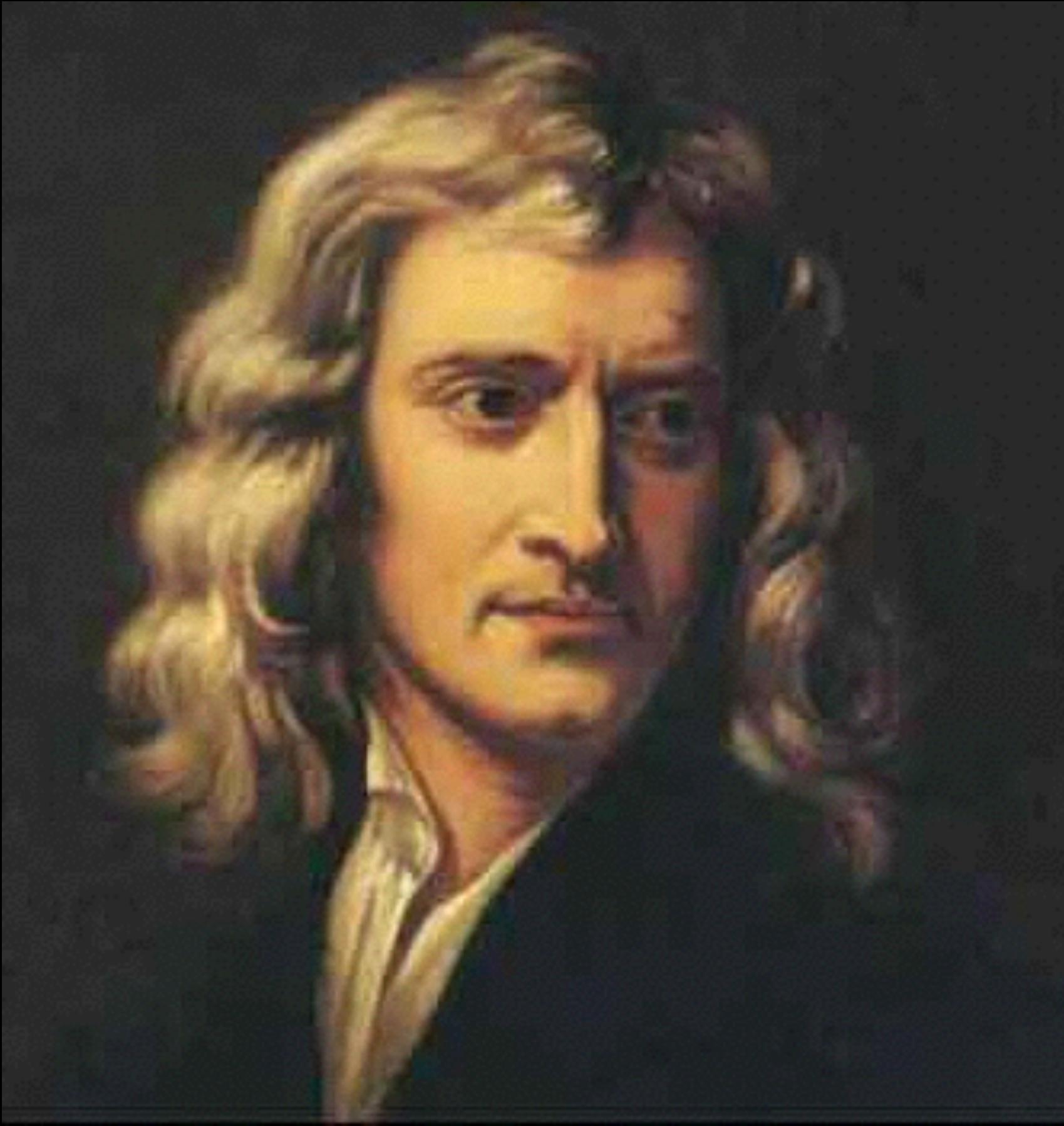
Manchas Solares

Estrellas Via Láctea



Fases
de Venus





Newton

PHILOSOPHIAE
NATURALIS
PRINCIPIA
MATHEMATICA.

Auctore J.S. NEWTON, Trin. Coll. Cantab. Soc. Matheseos
Proclitore Luciflano, & Societatis Regalis Sodali.

IMPRIMATUR.
S. PEPYS, Reg. Soc. F.R.E.S.S.
Juli 5. 1687.

LONDINI,
Julii Secundis Regis ac Typis Iosephi Streater. Prostat apud
plures Bibliopolas. Anno MDCLXXXVII.

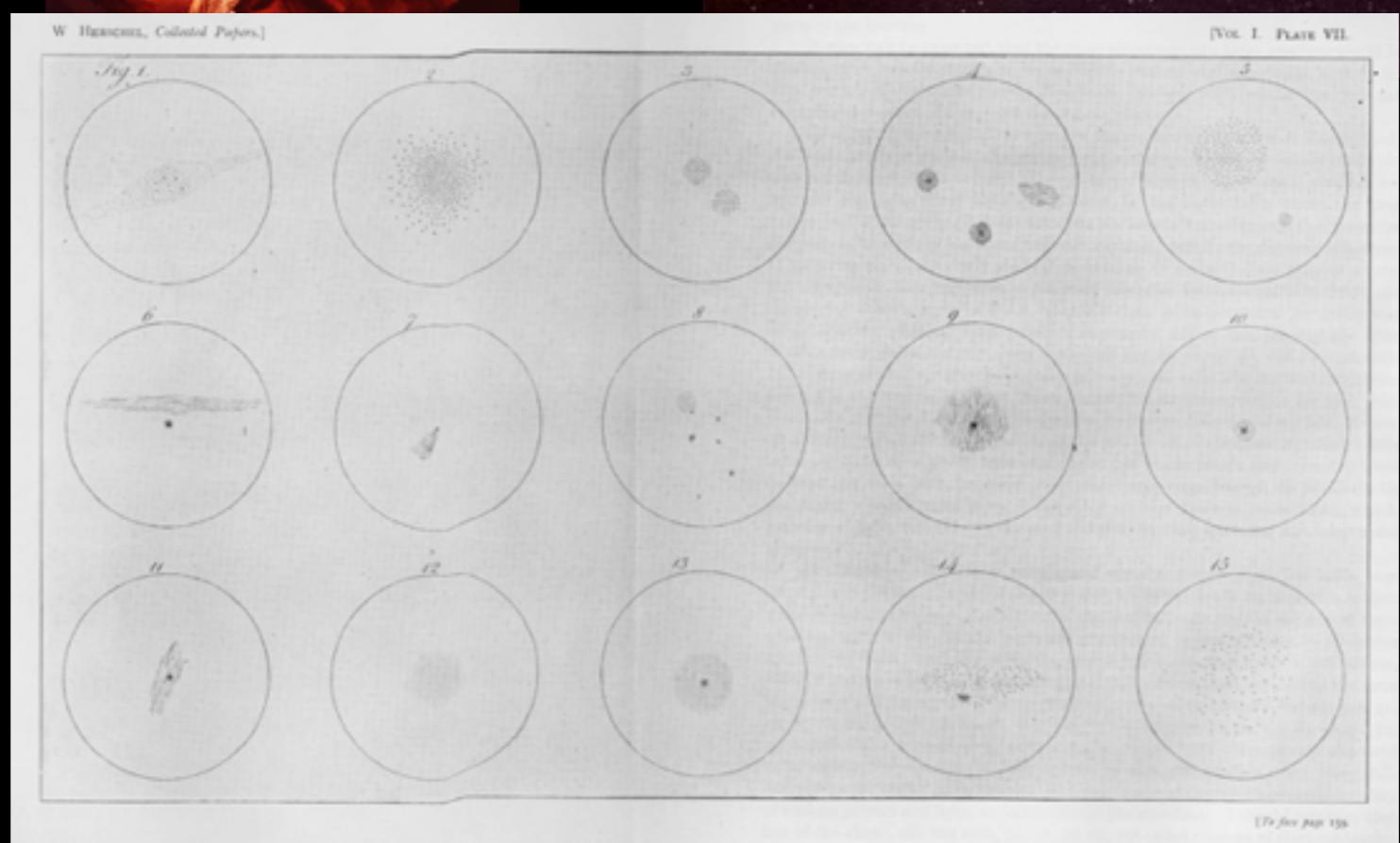


Telescopio Reflector

Halley



Herschel



Laplace

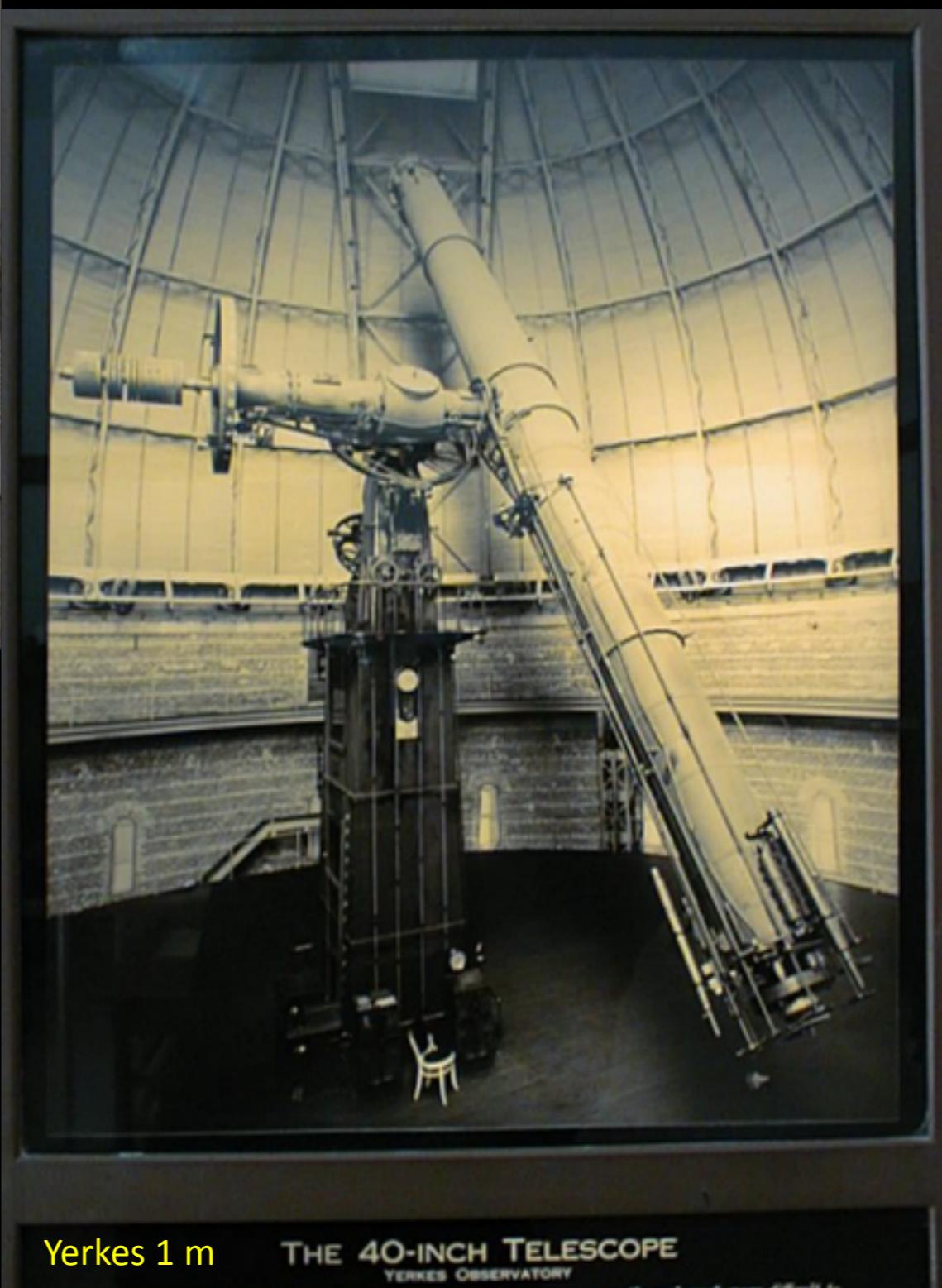




Leviatan 1,8 m



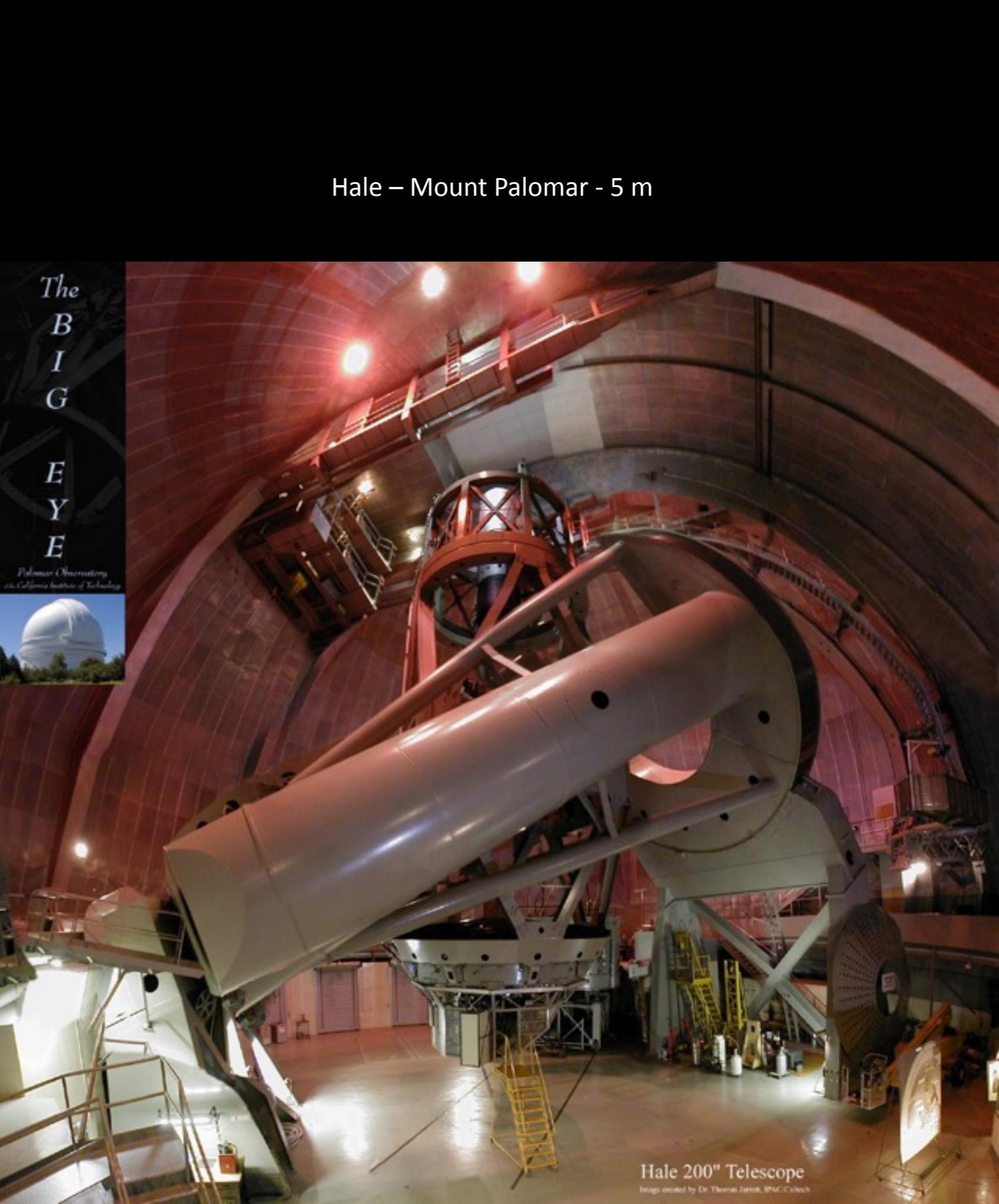
Potsdam 0,8 m



Yerkes 1 m THE 40-INCH TELESCOPE
YERKES OBSERVATORY



Hooker – Mount Wilson - 2,5 m



Hale – Mount Palomar - 5 m

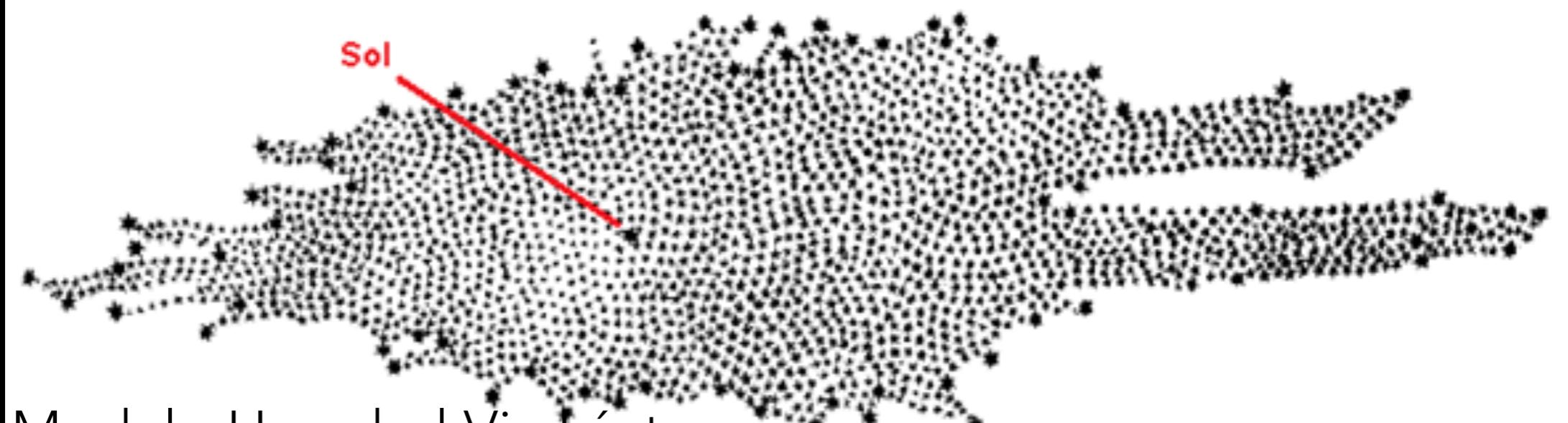
The
B
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E

Palomar Observatory
as California Institute of Technology

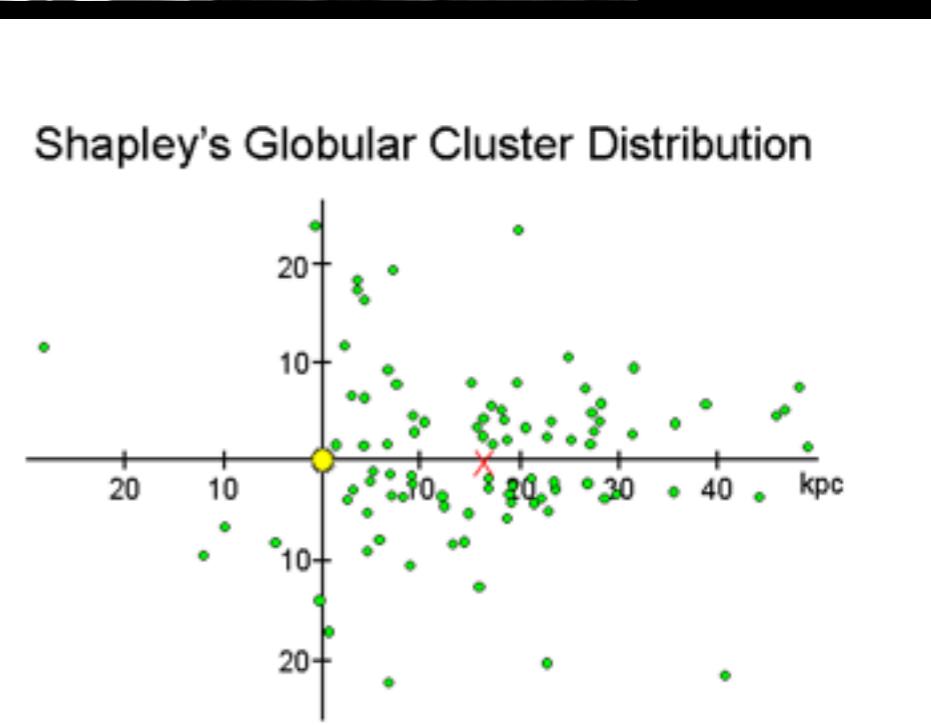
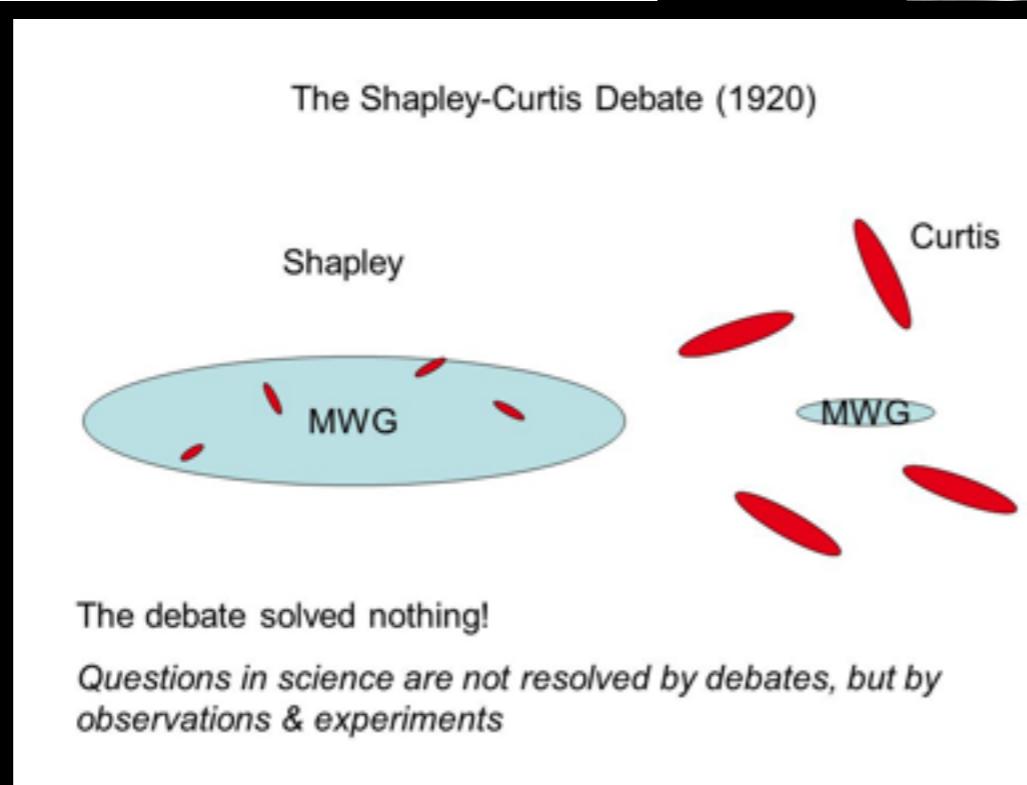
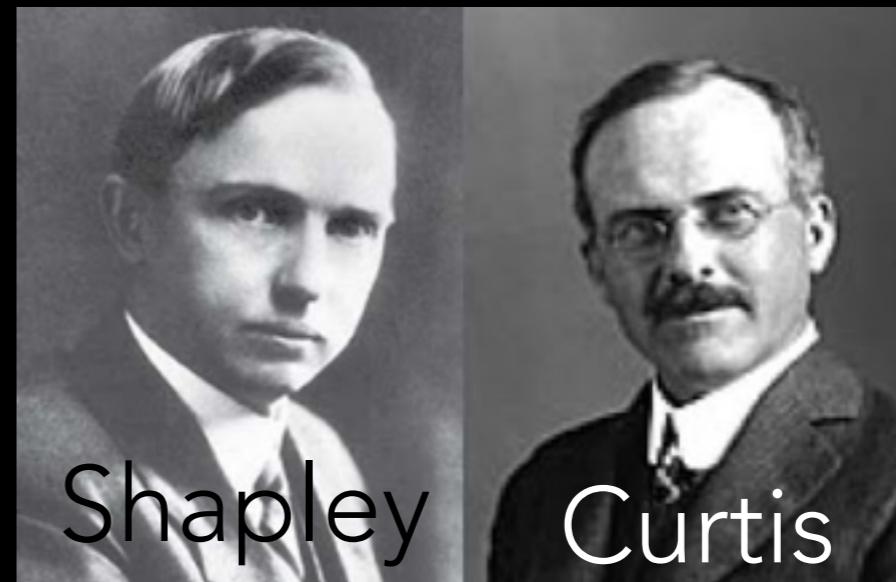
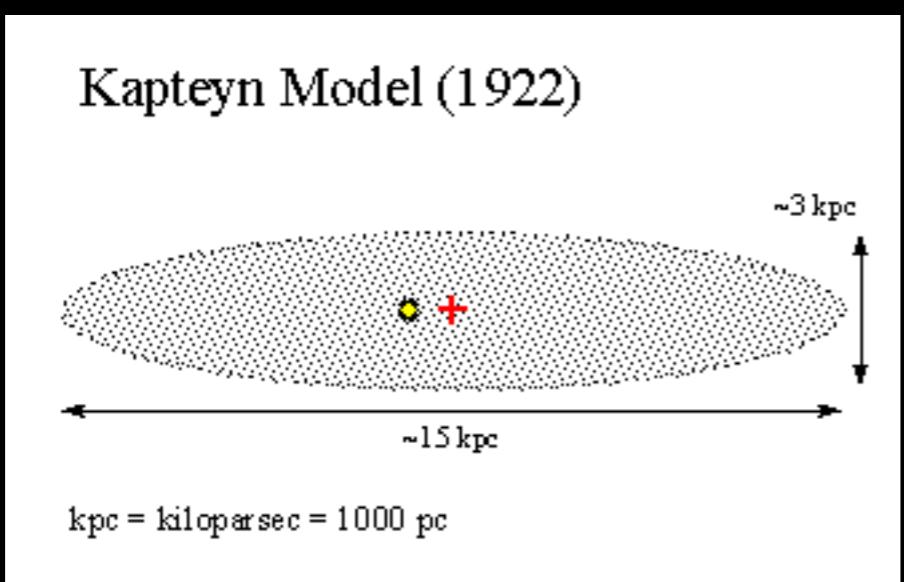


Hale 200" Telescope

Image created by Dr. Thomas Jarry, IPAC/Caltech



Modelo Herschel Via Láctea

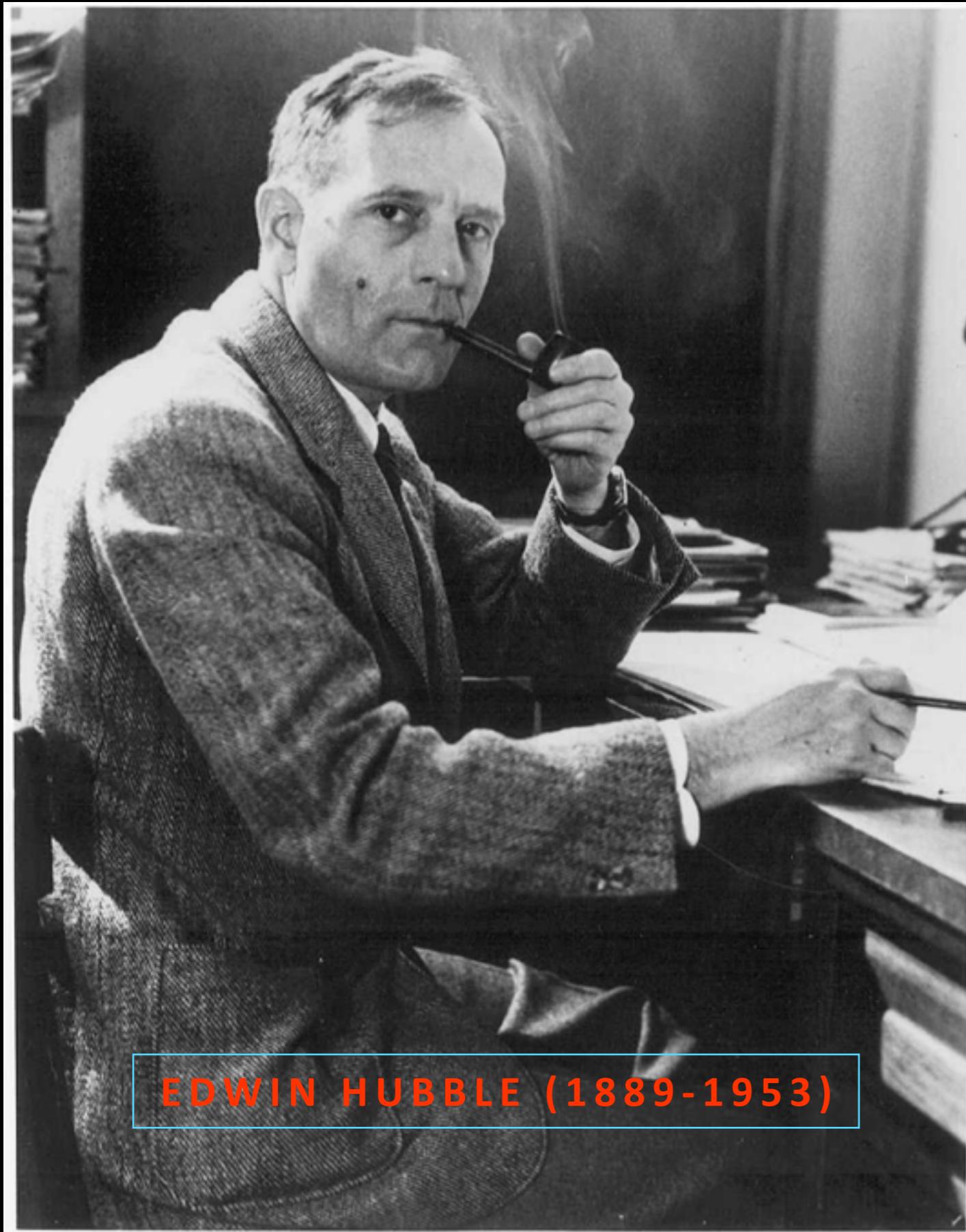




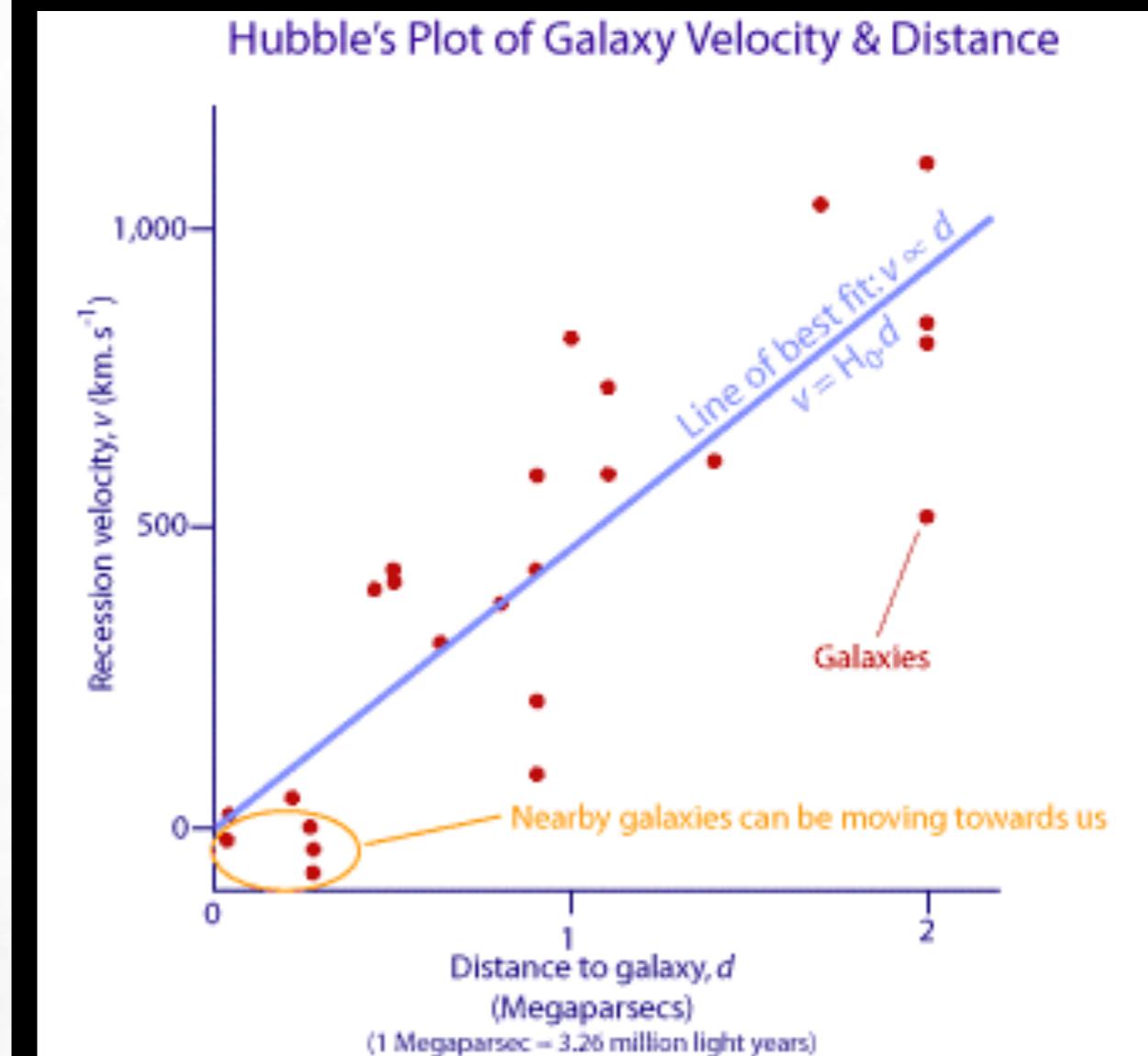


Copyright Bersonic

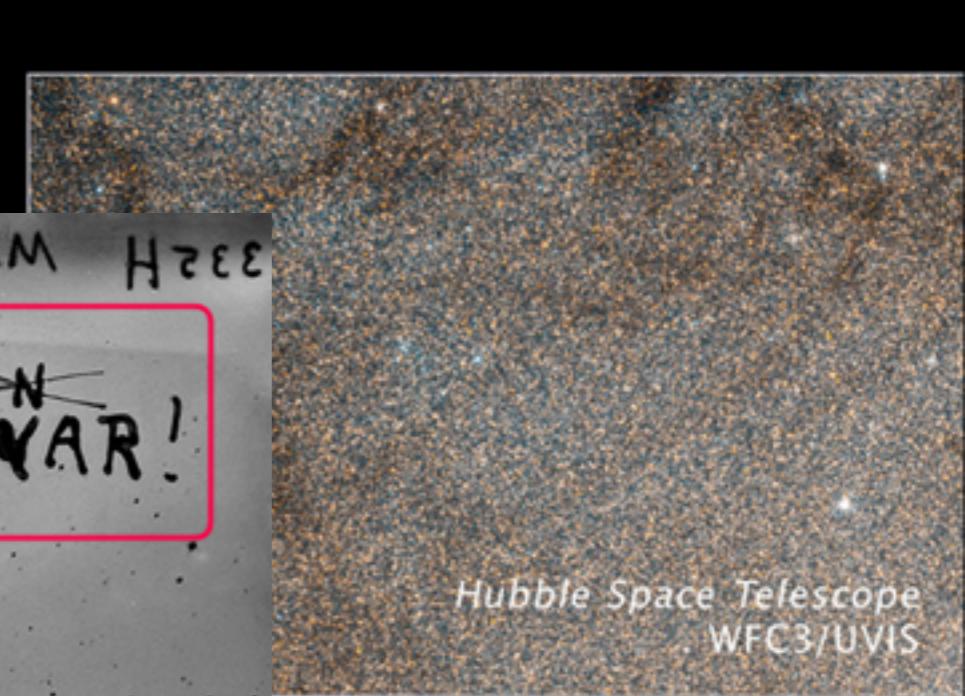
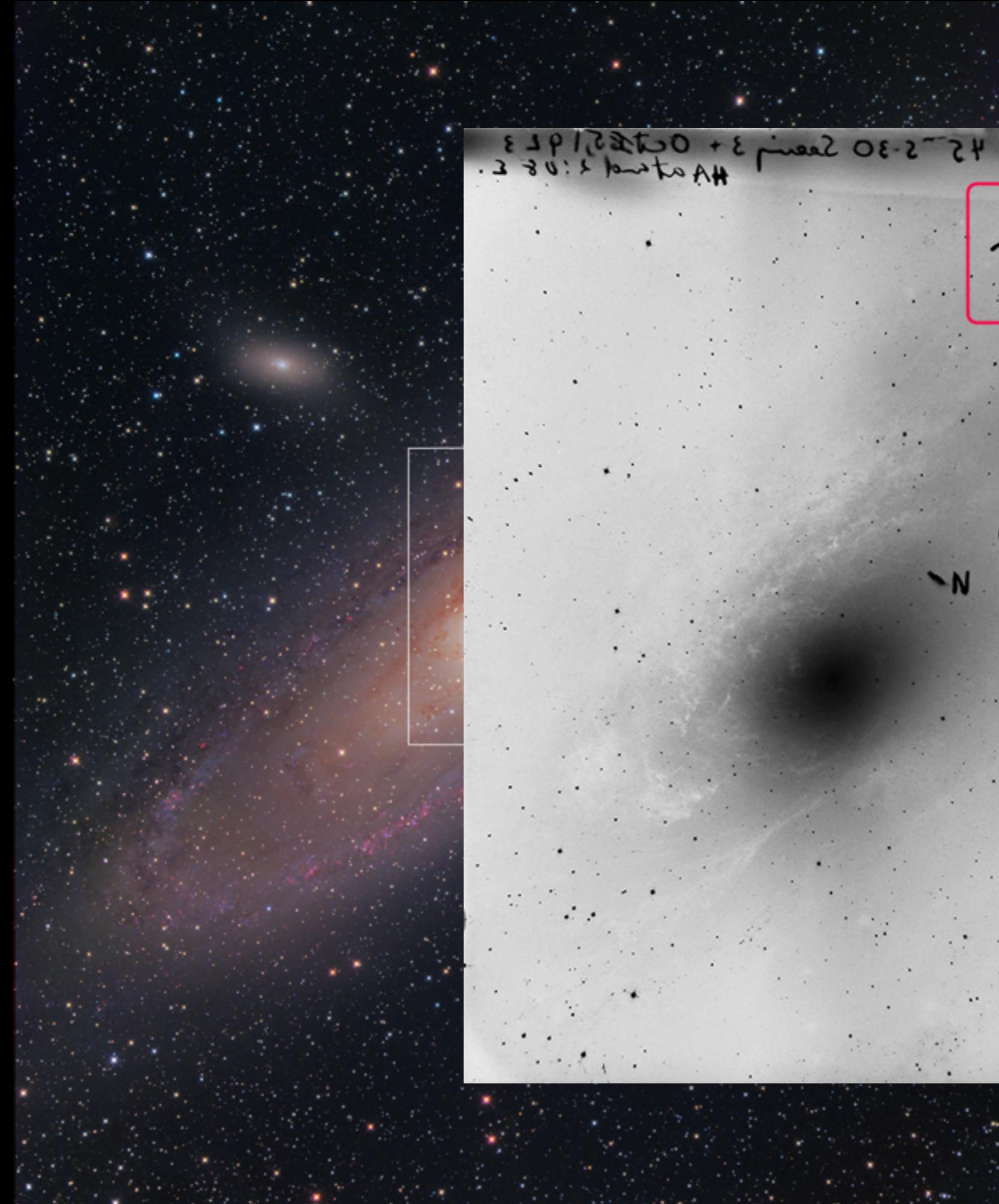
Galaxia de Andrómeda - M31

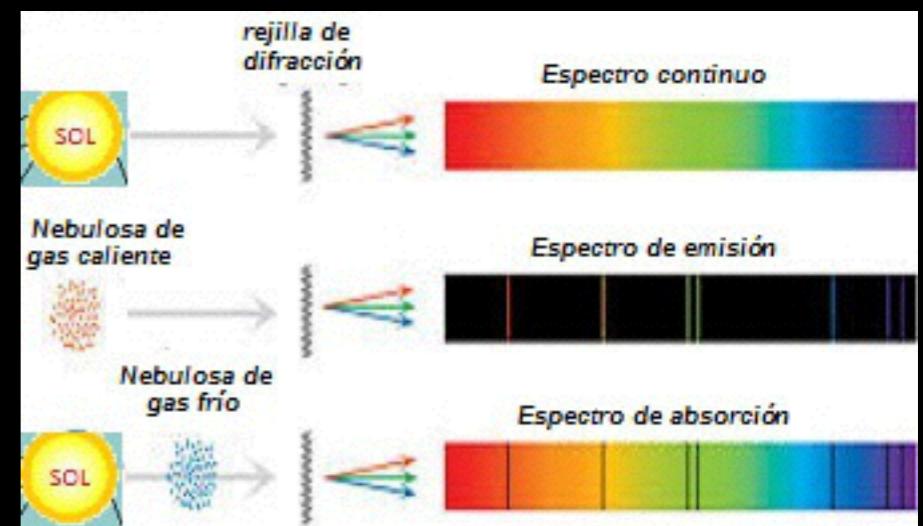
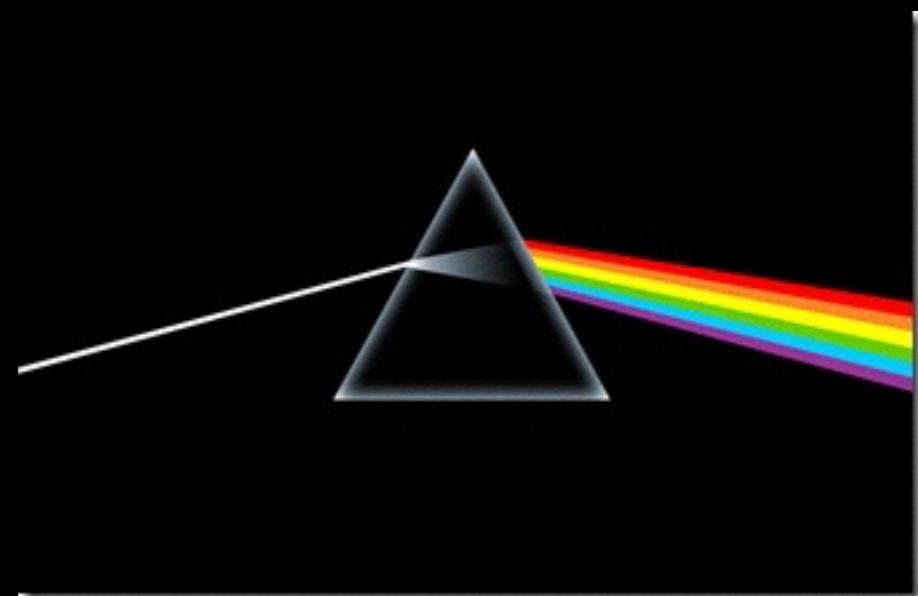


EDWIN HUBBLE (1889-1953)

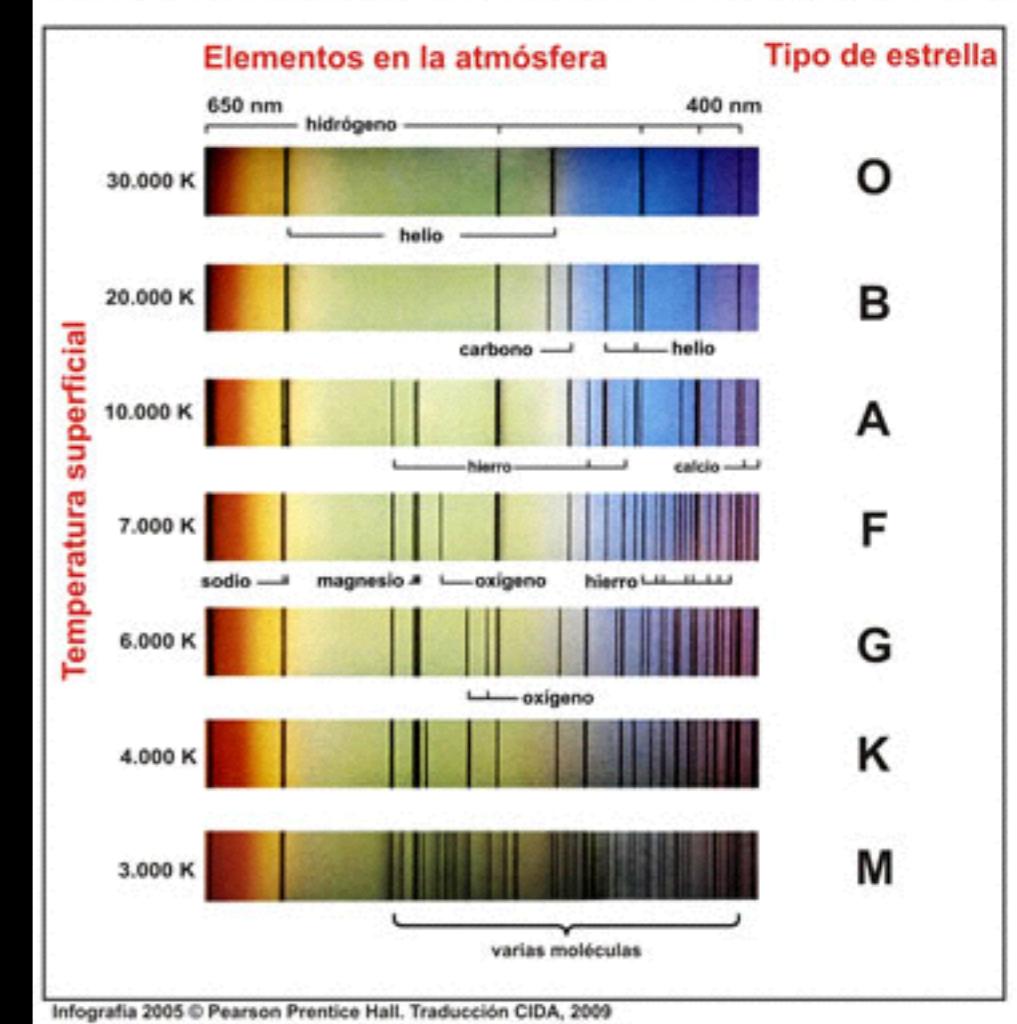
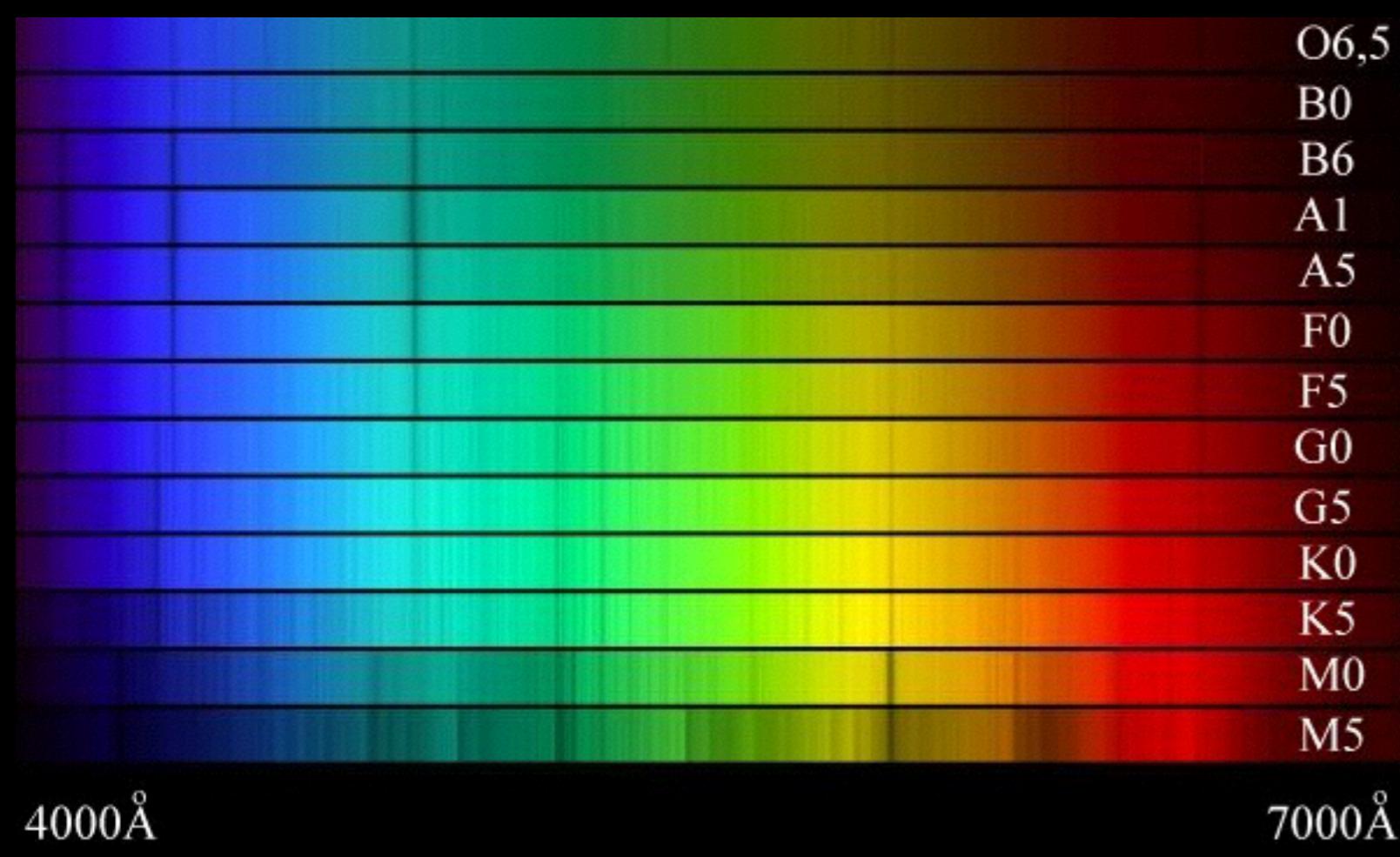


LEY DE
HUBBLE





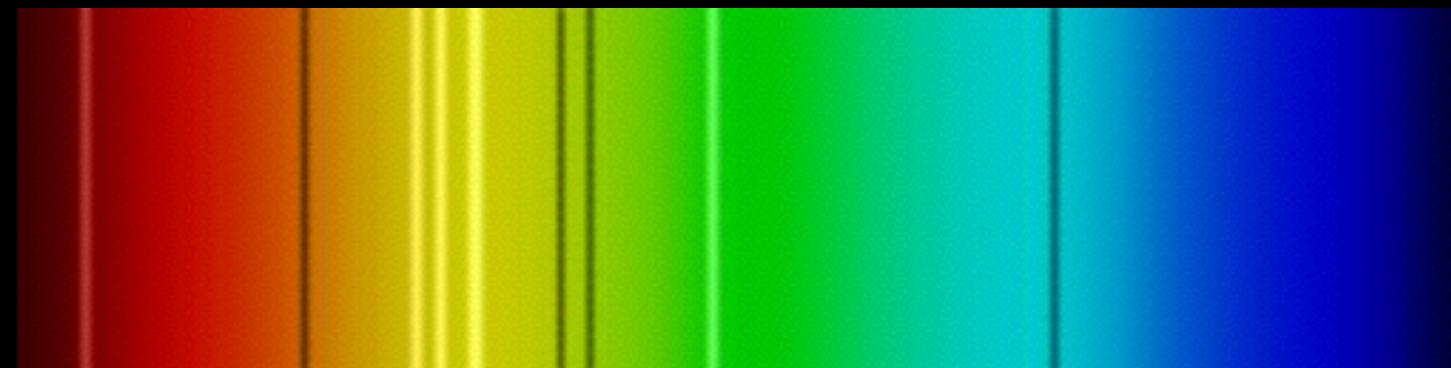
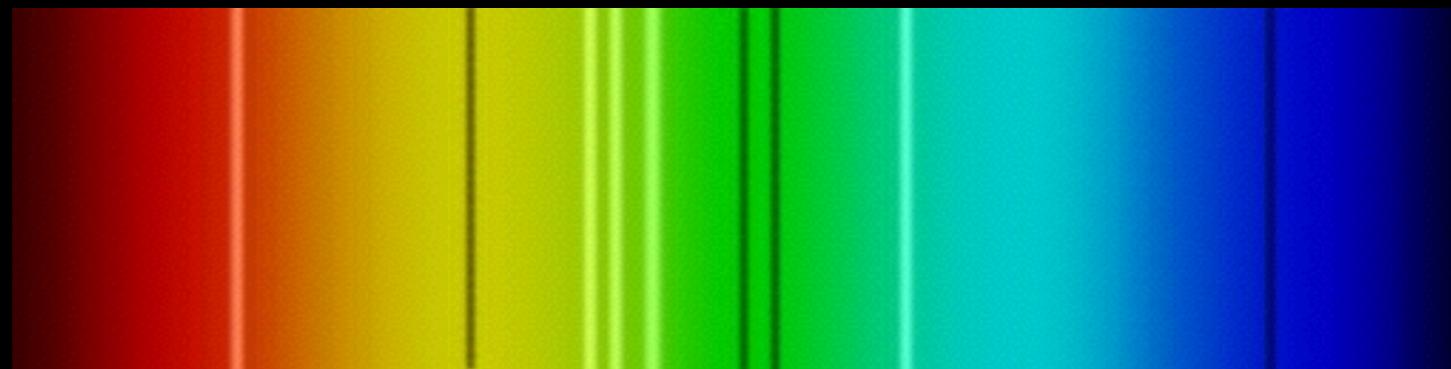
CLASIFICACIÓN ESPECTRAL DE LAS ESTRELLAS



EL UNIVERSO EN EXPANSIÓN

ACERCAMIENTO

DESPLAZAMIENTO HACIA EL AZUL (BLUESHIFT)



DESPLAZAMIENTO HACIA EL ROJO (REDSHIFT)

ALEJAMIENTO

Velocity-Distance Relation among Extra-Galactic Nebulae.

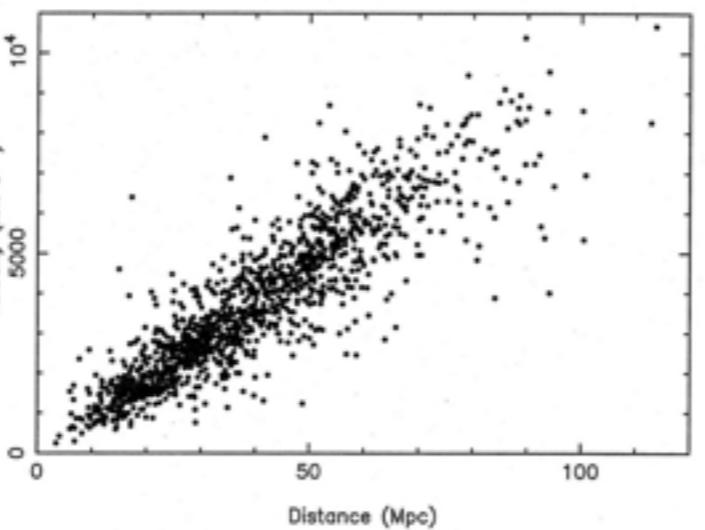
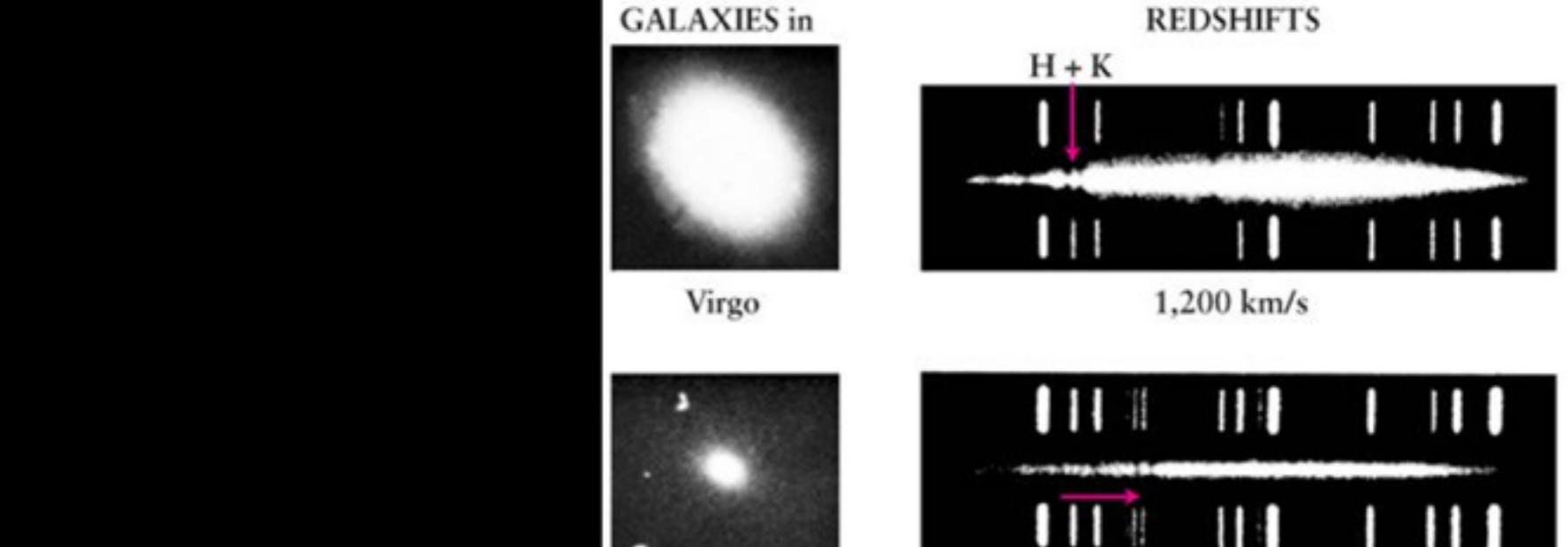
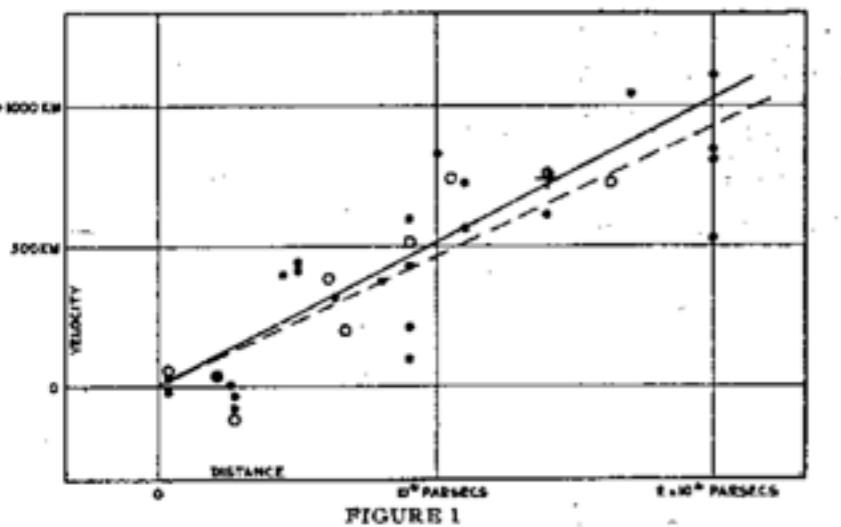
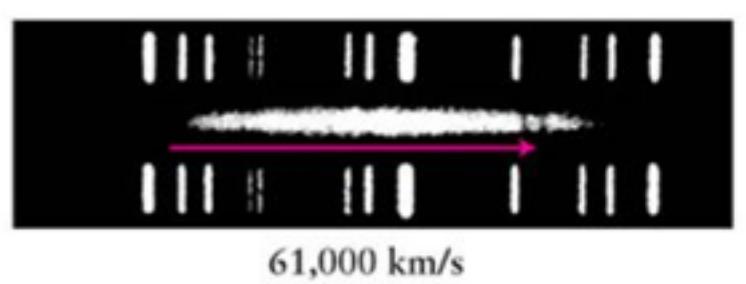
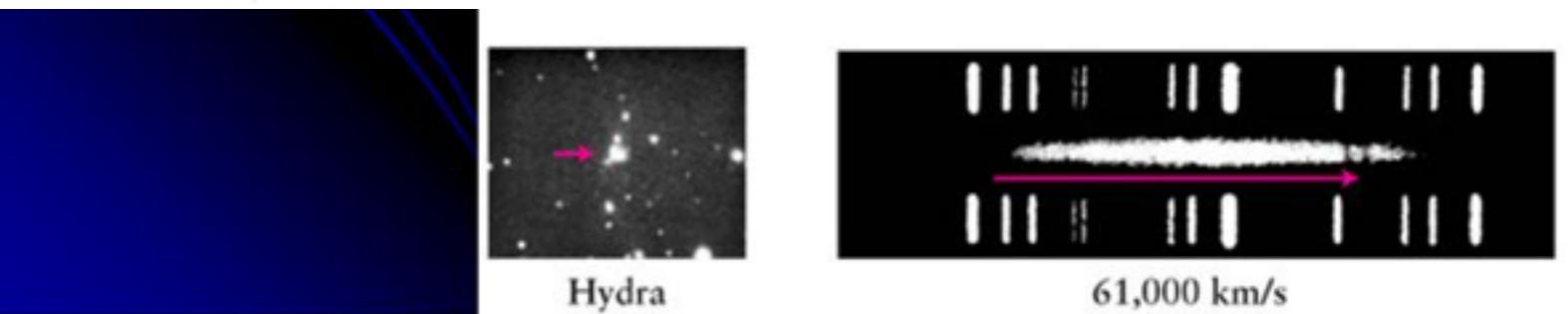
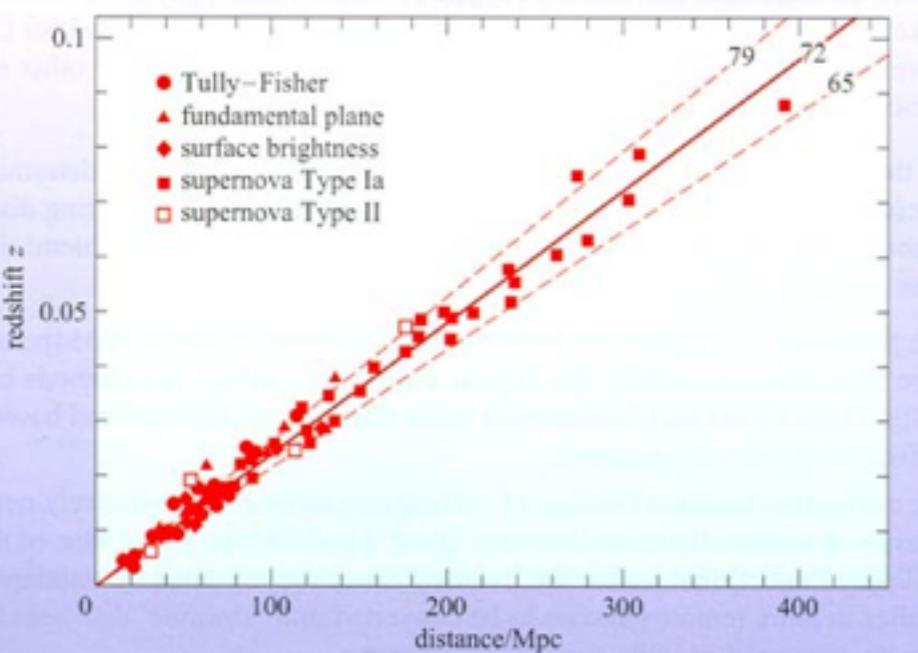
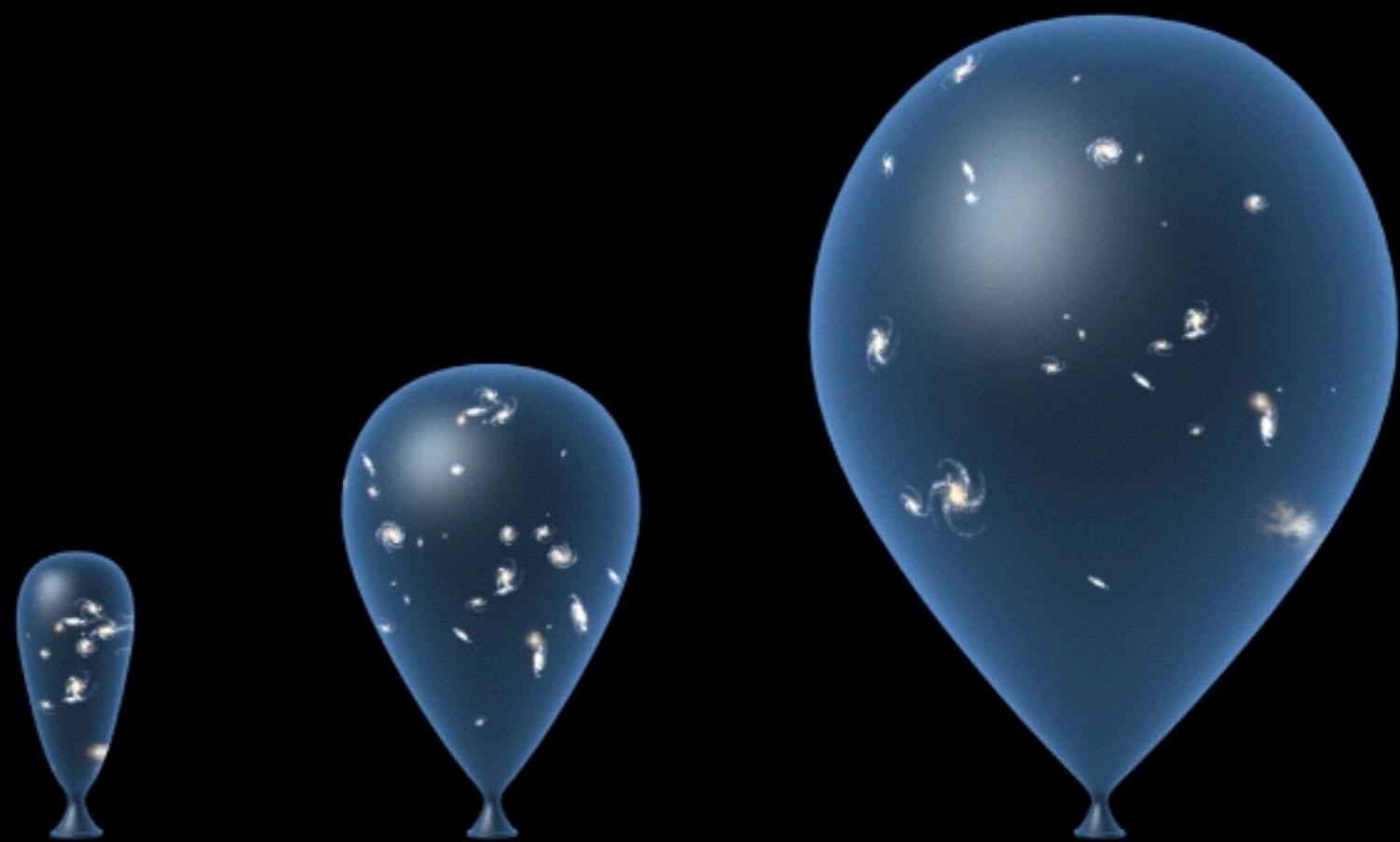
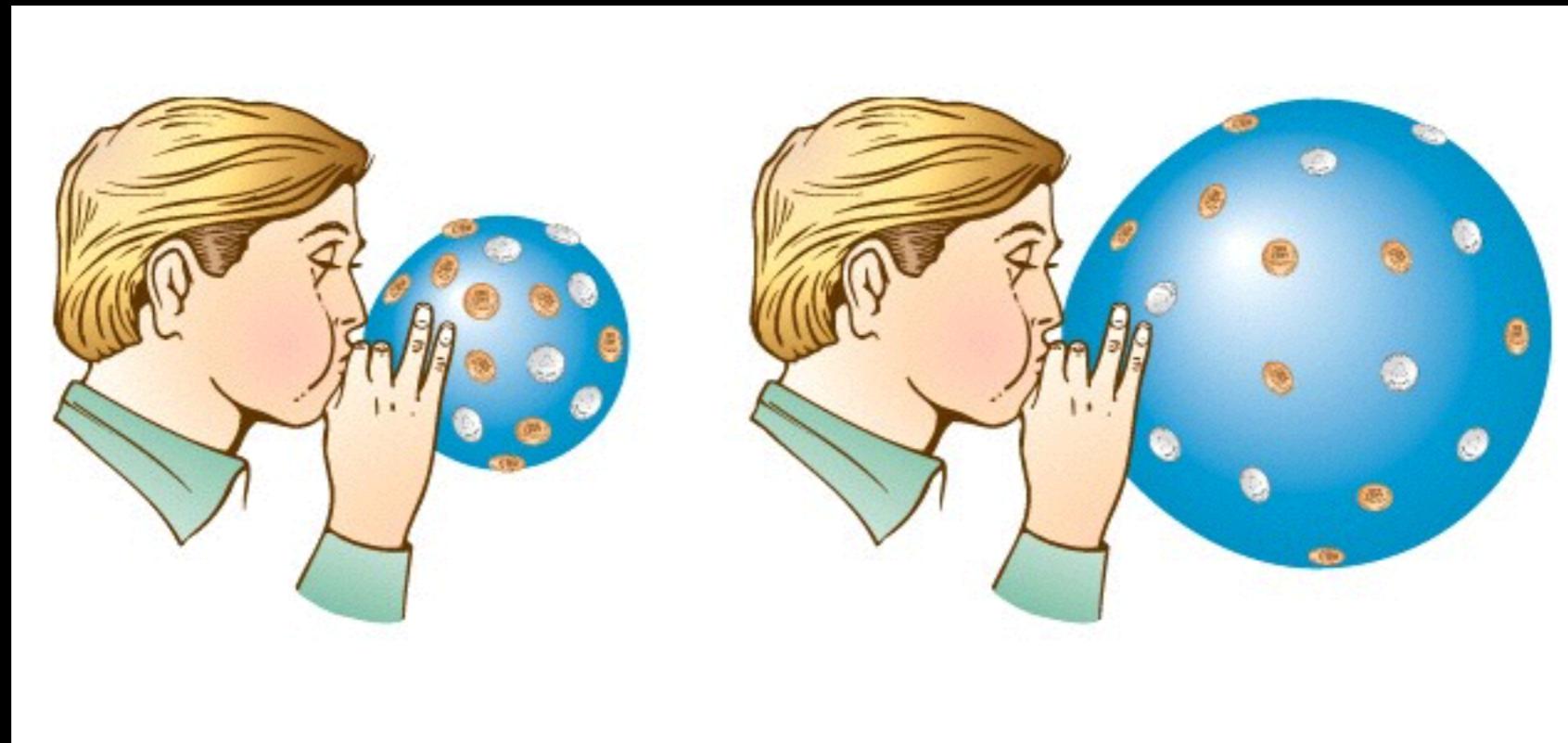
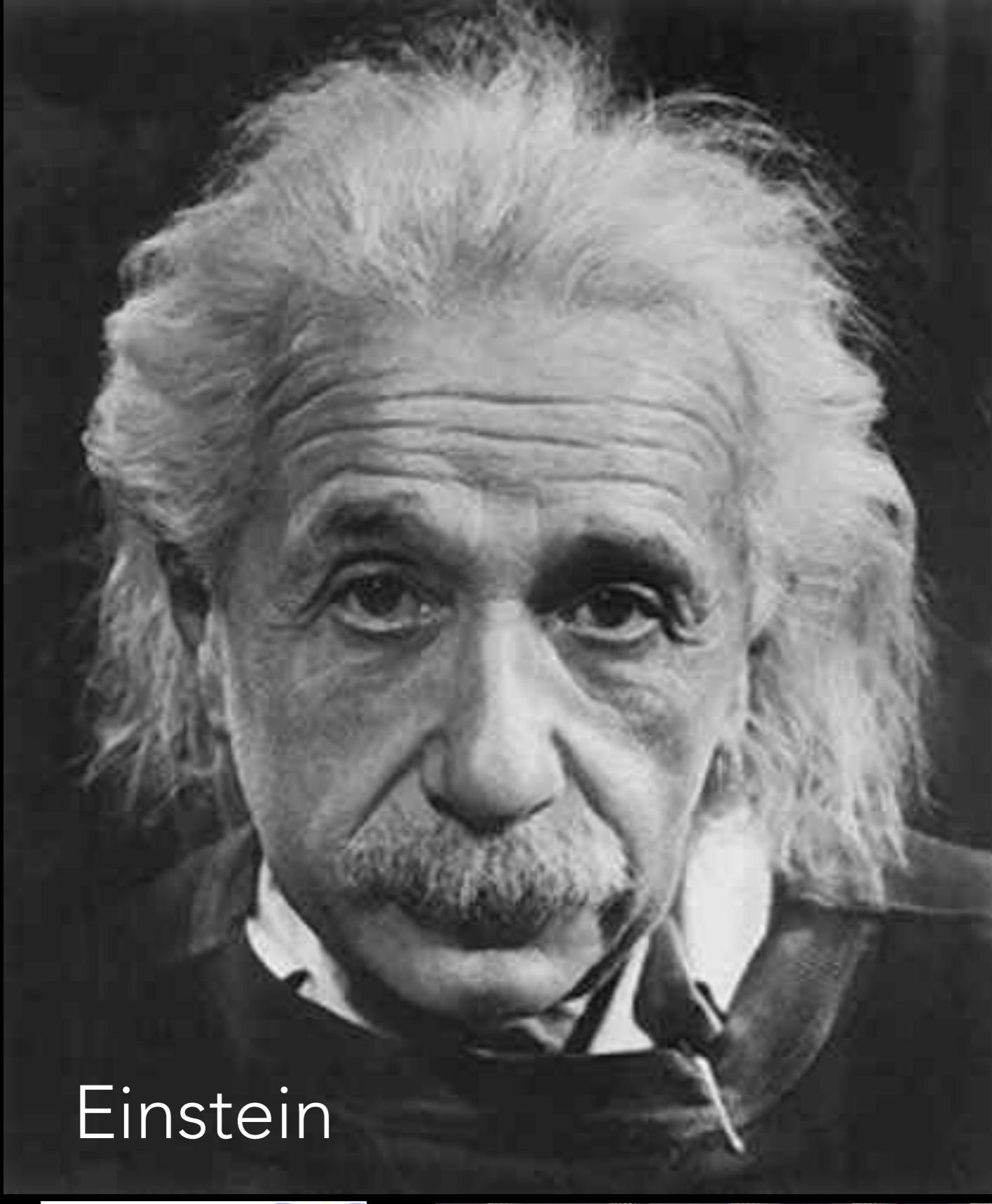


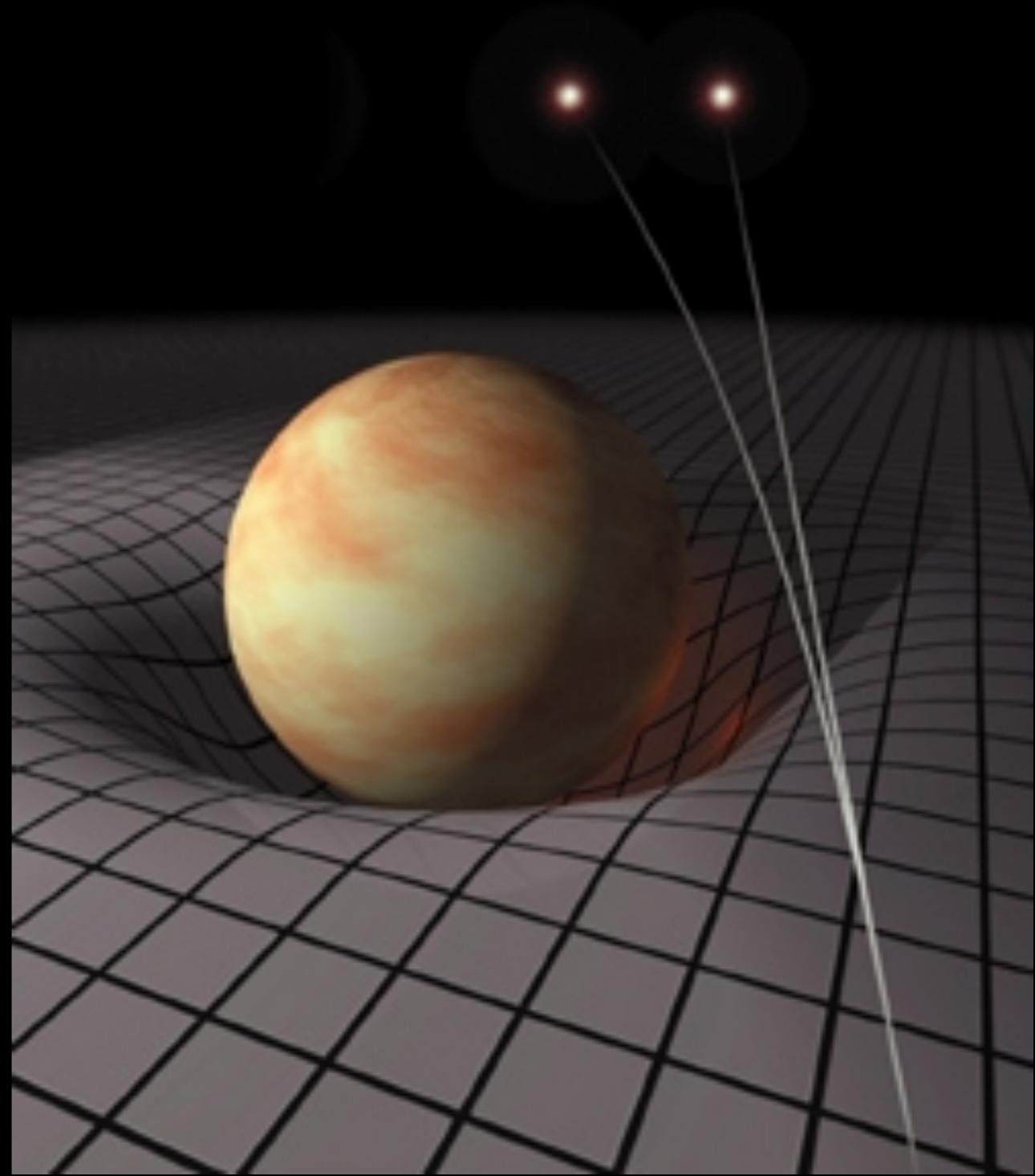
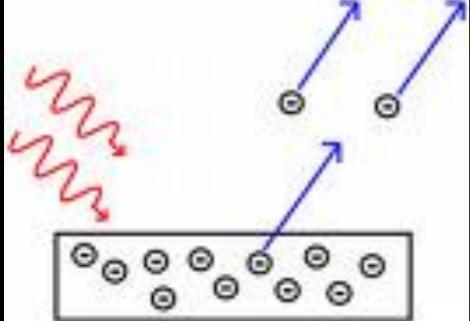
Figure 2.5 A plot of velocity versus estimated distance for a set of 1355 galaxies. A straight-line relation implies Hubble's law. The considerable scatter is due to observational uncertainties and random galaxy motions, but the best-fit line accurately gives Hubble's law. [The x-axis scale assumes a particular value of H_0 .]



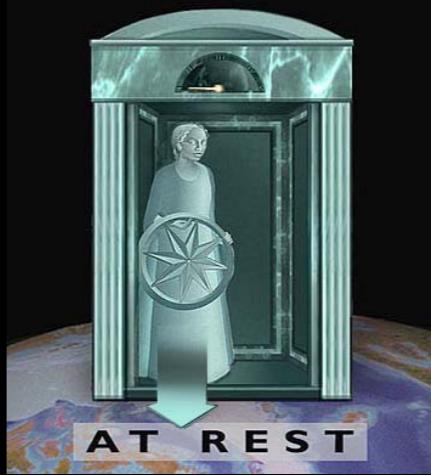




Einstein

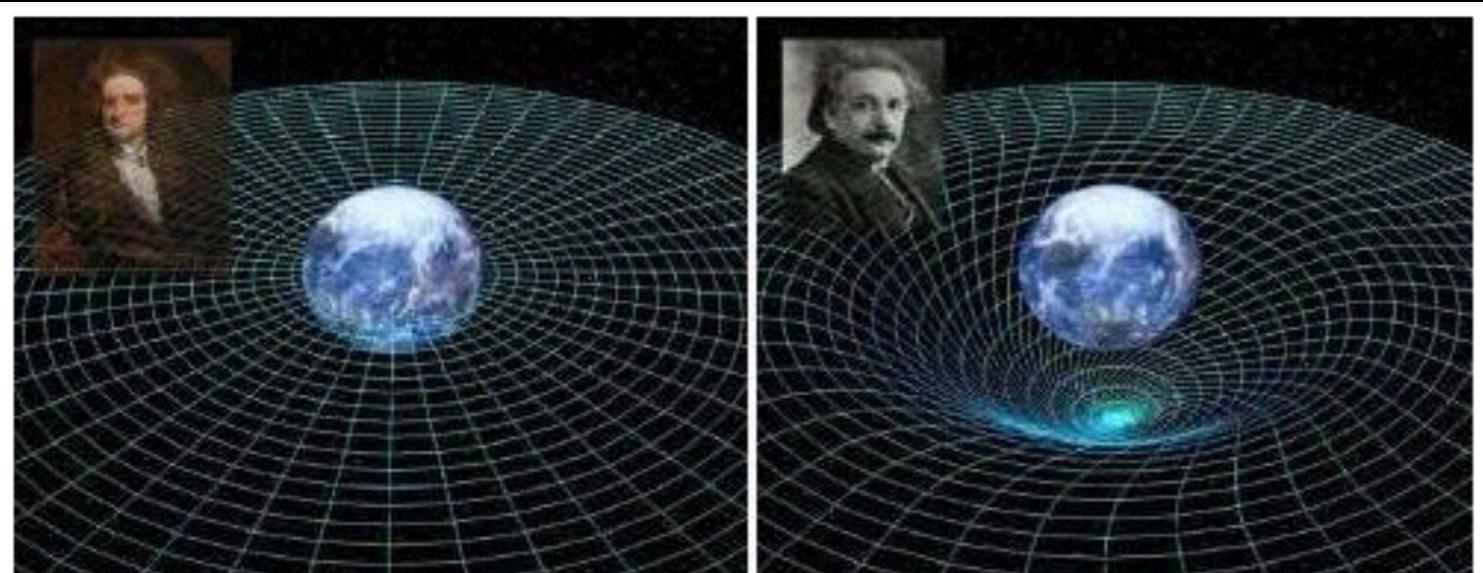
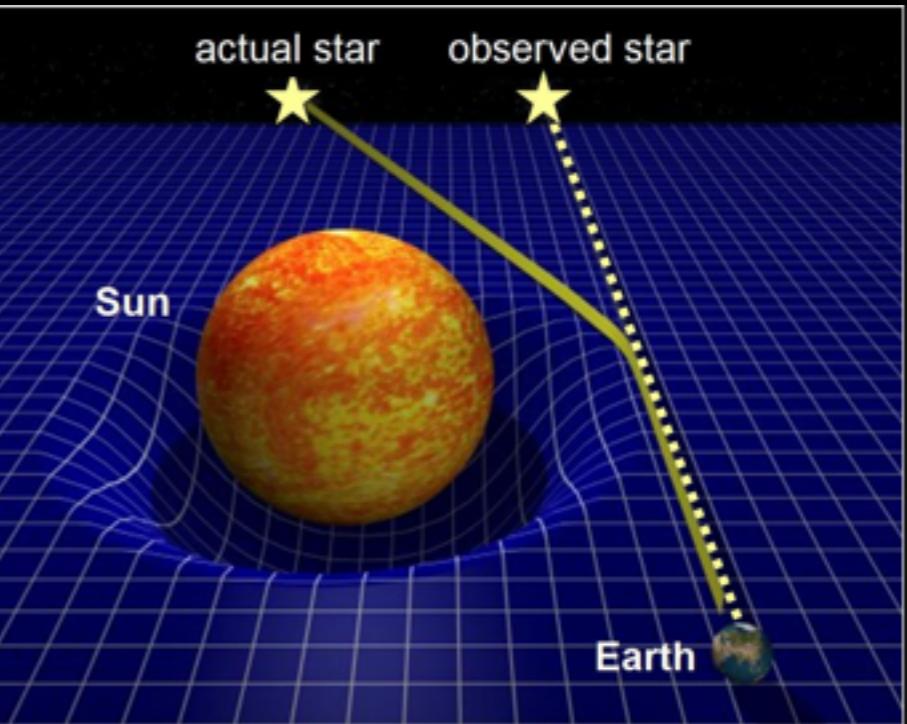
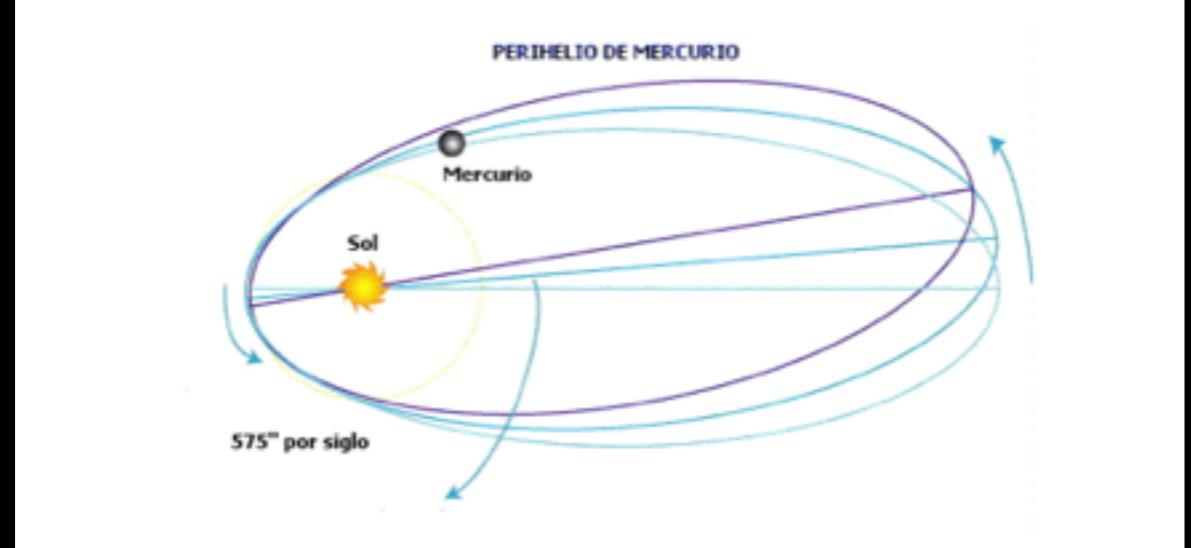


ON EARTH



IN SPACE

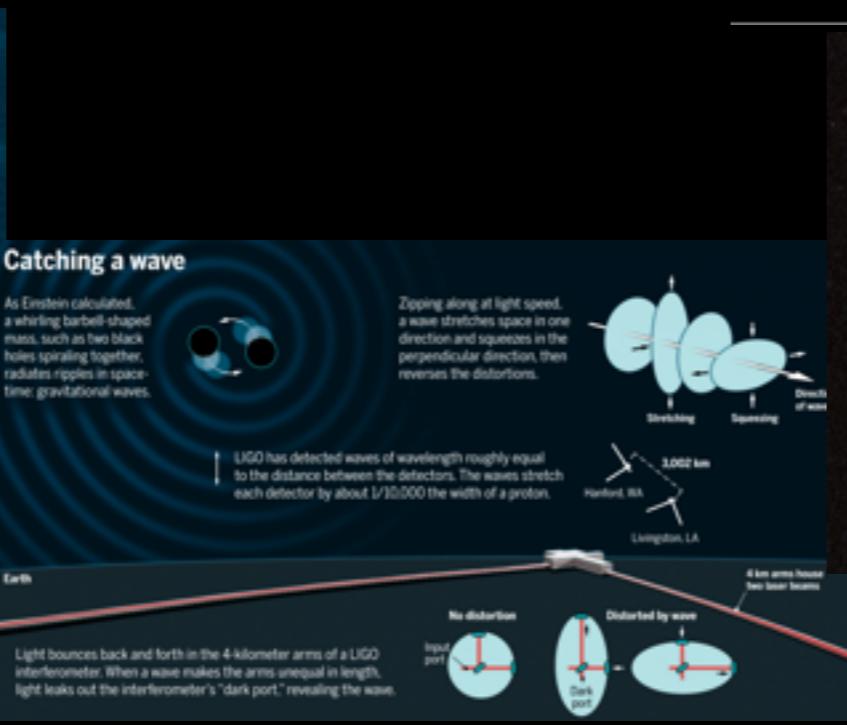
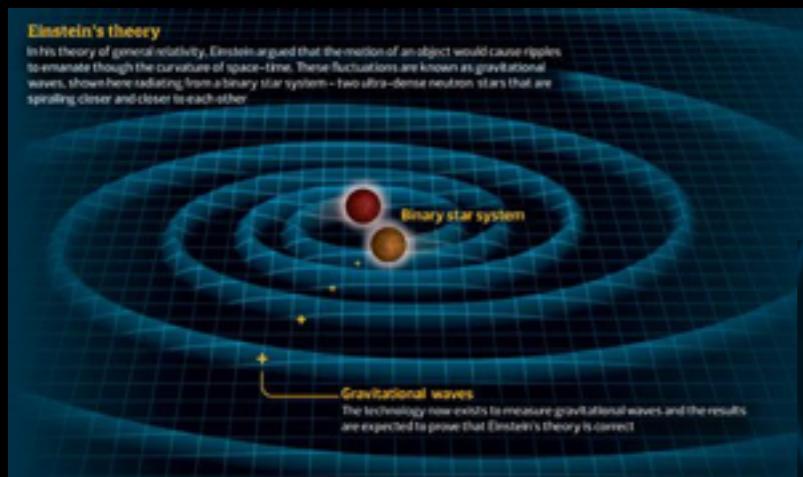
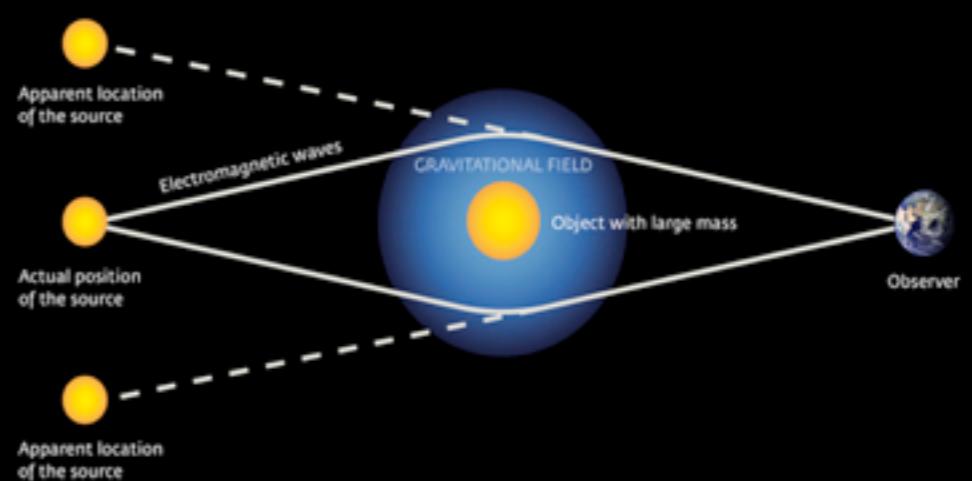


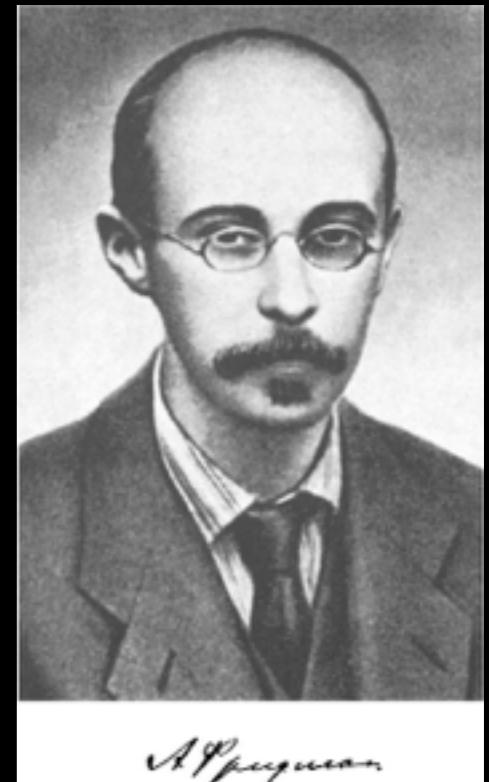
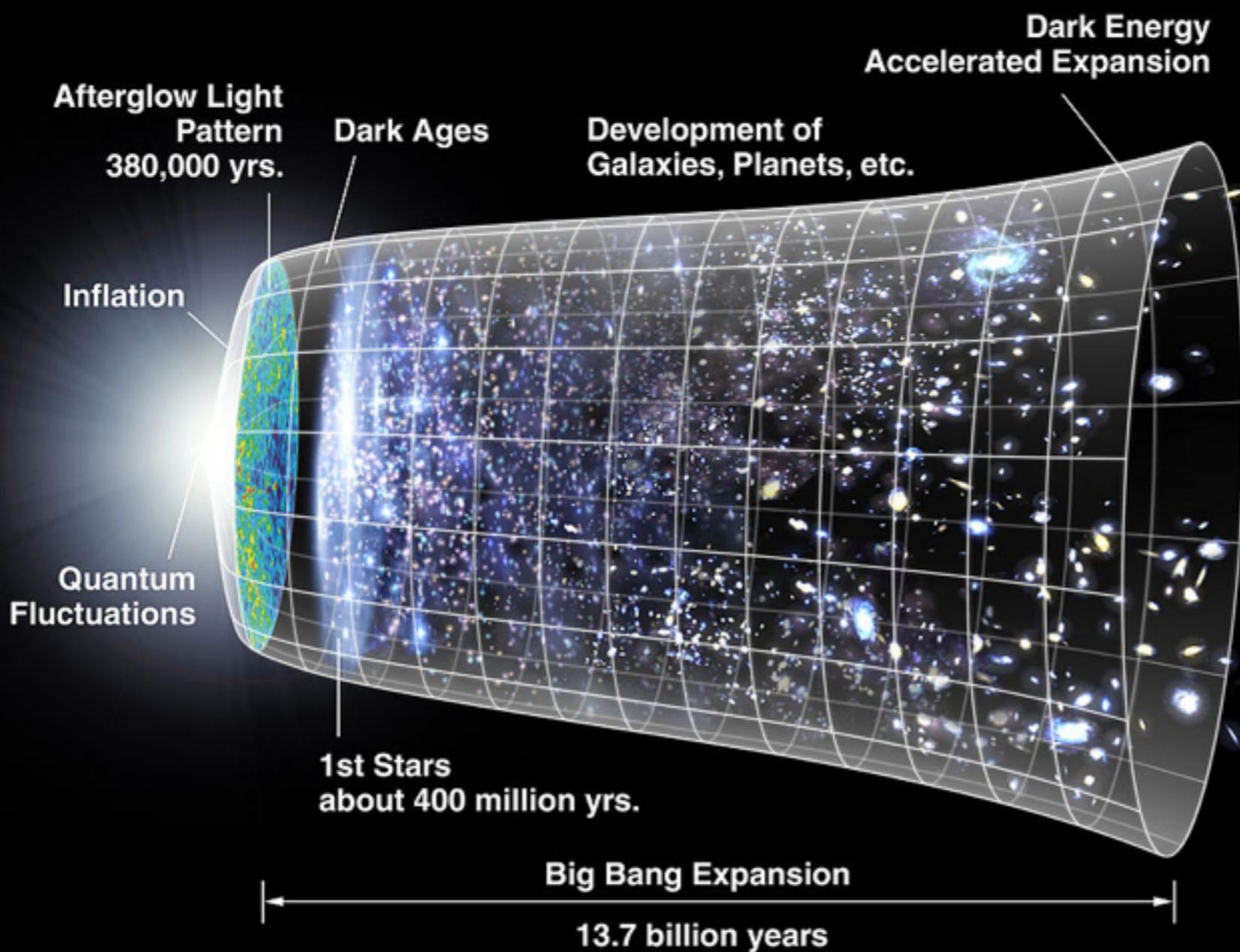


Newton's fixed space

Einstein's flexible space-time

source: NASA



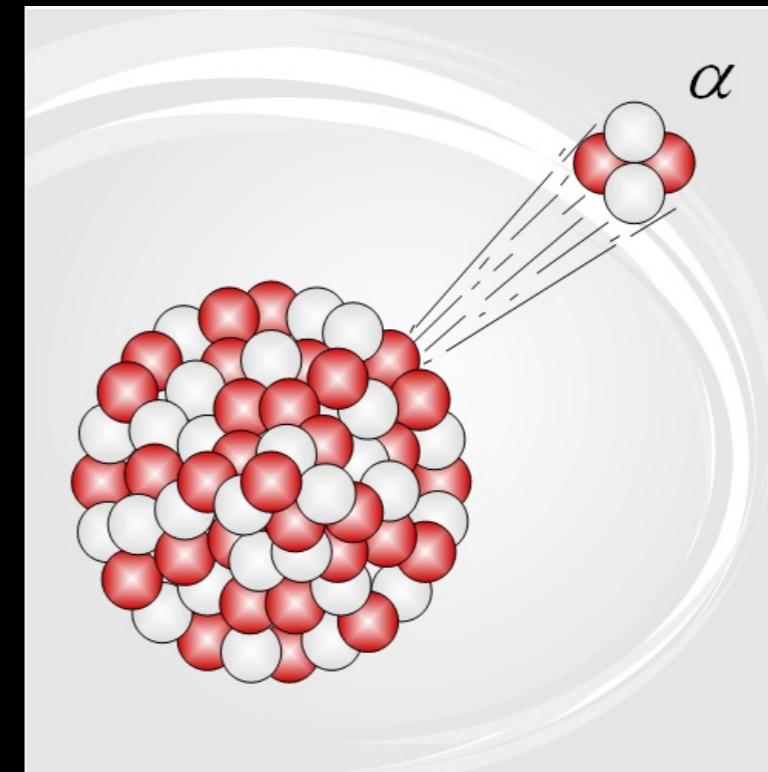


Friedman 1888-1925



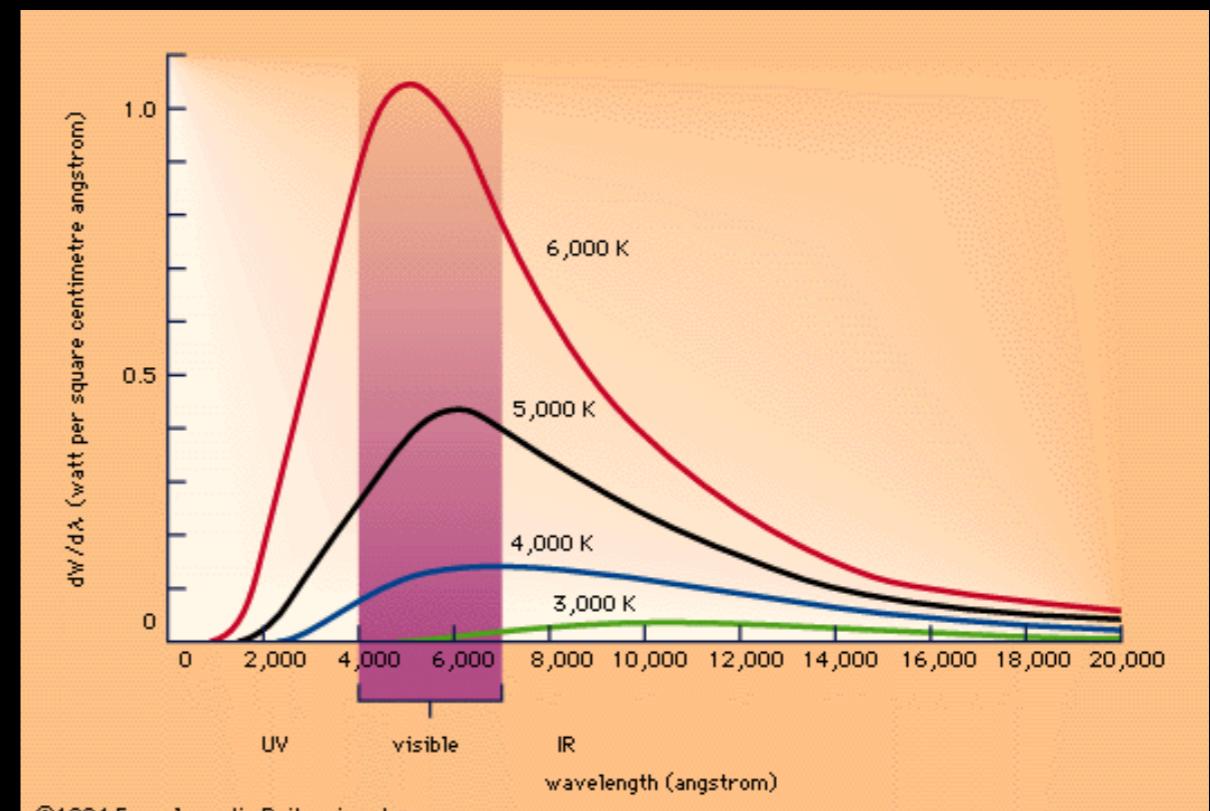
Lemaître 1894-1966

Rayos X



Radiactividad

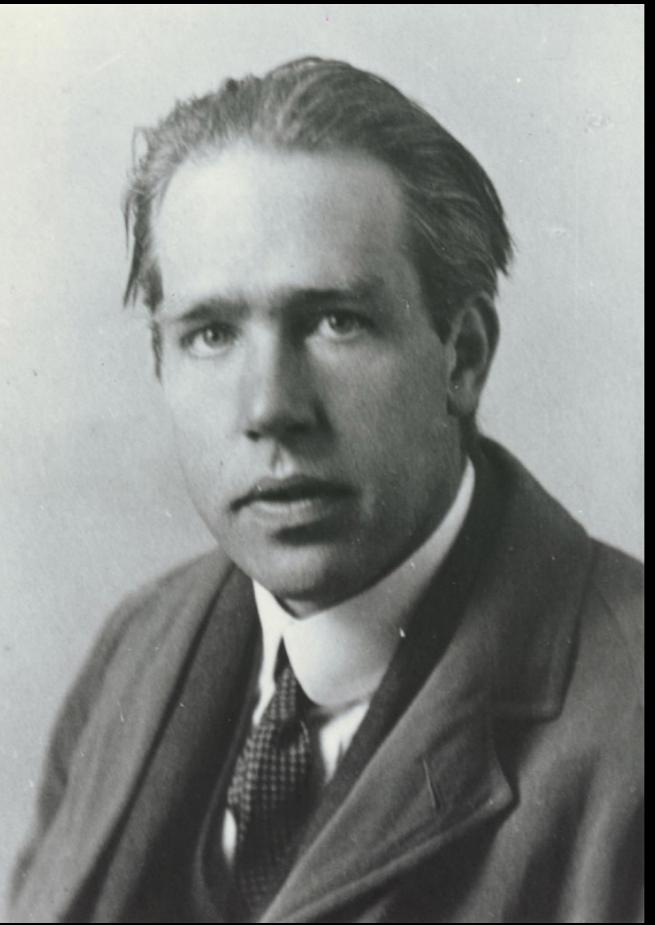
Planck



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Radiación Cuerpo Negro

Física Cuántica



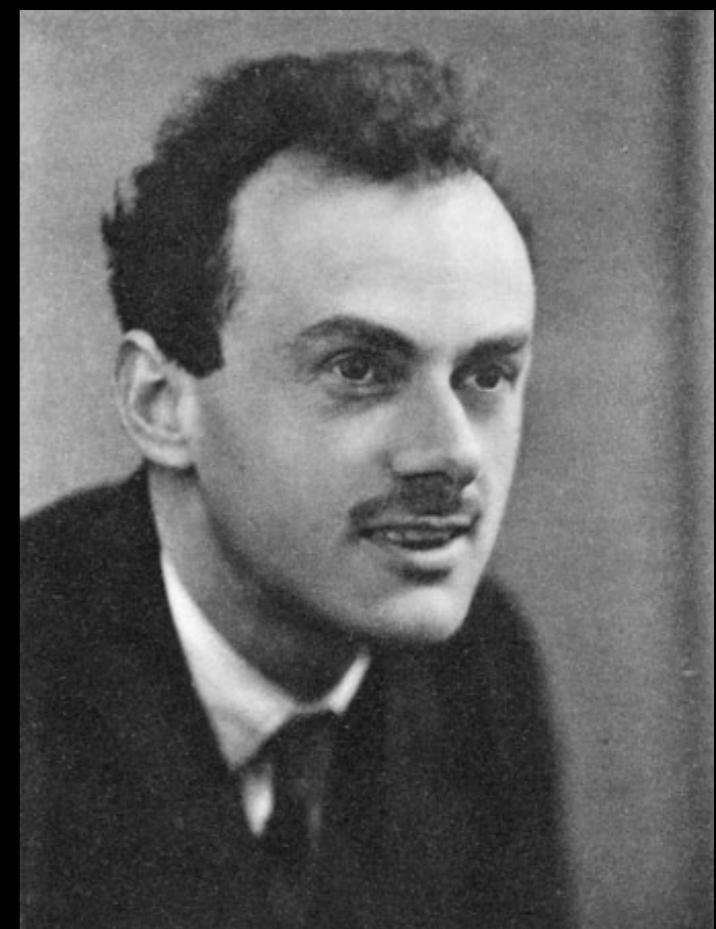
Bohr



Heisenberg

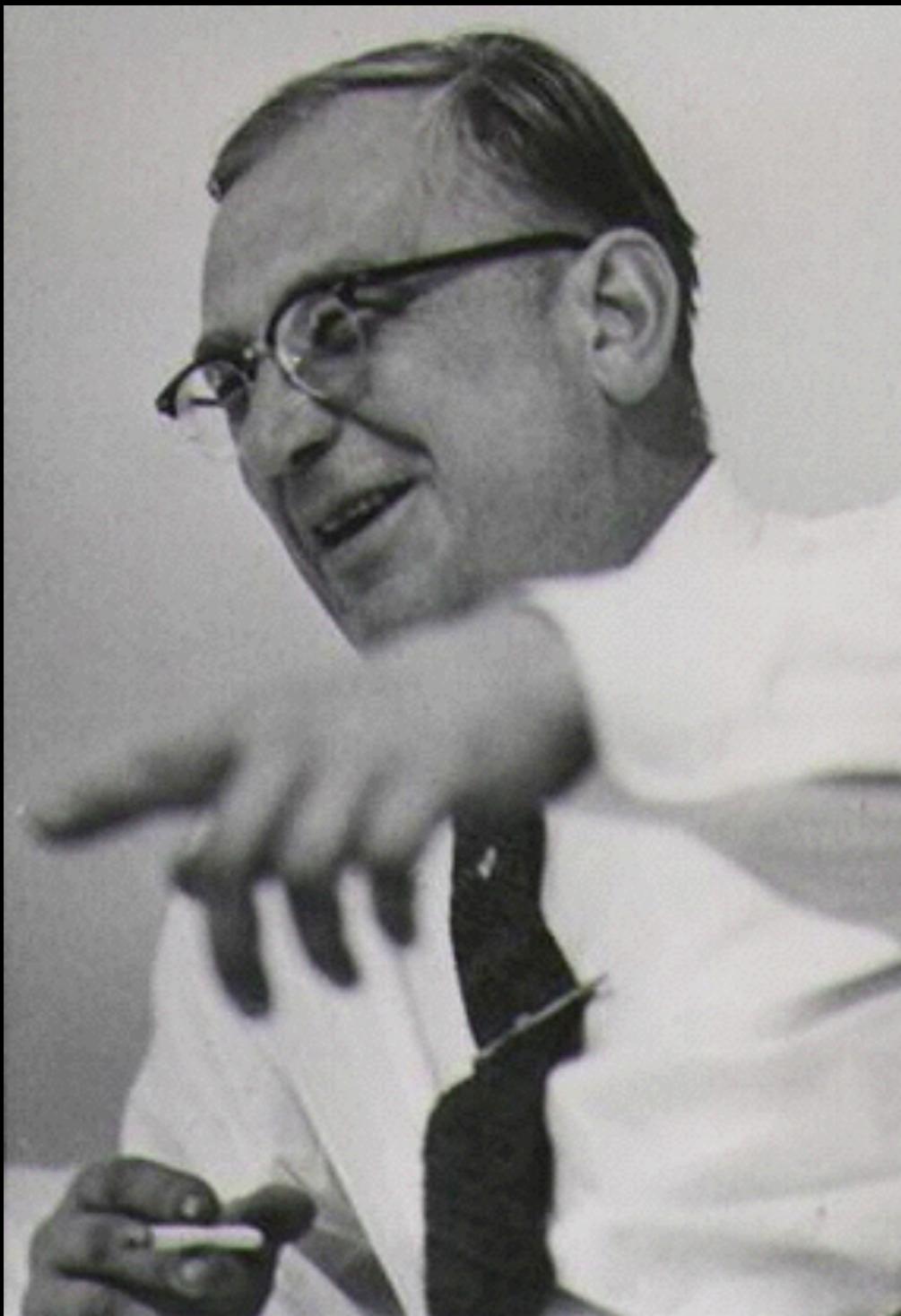


Schrödinger

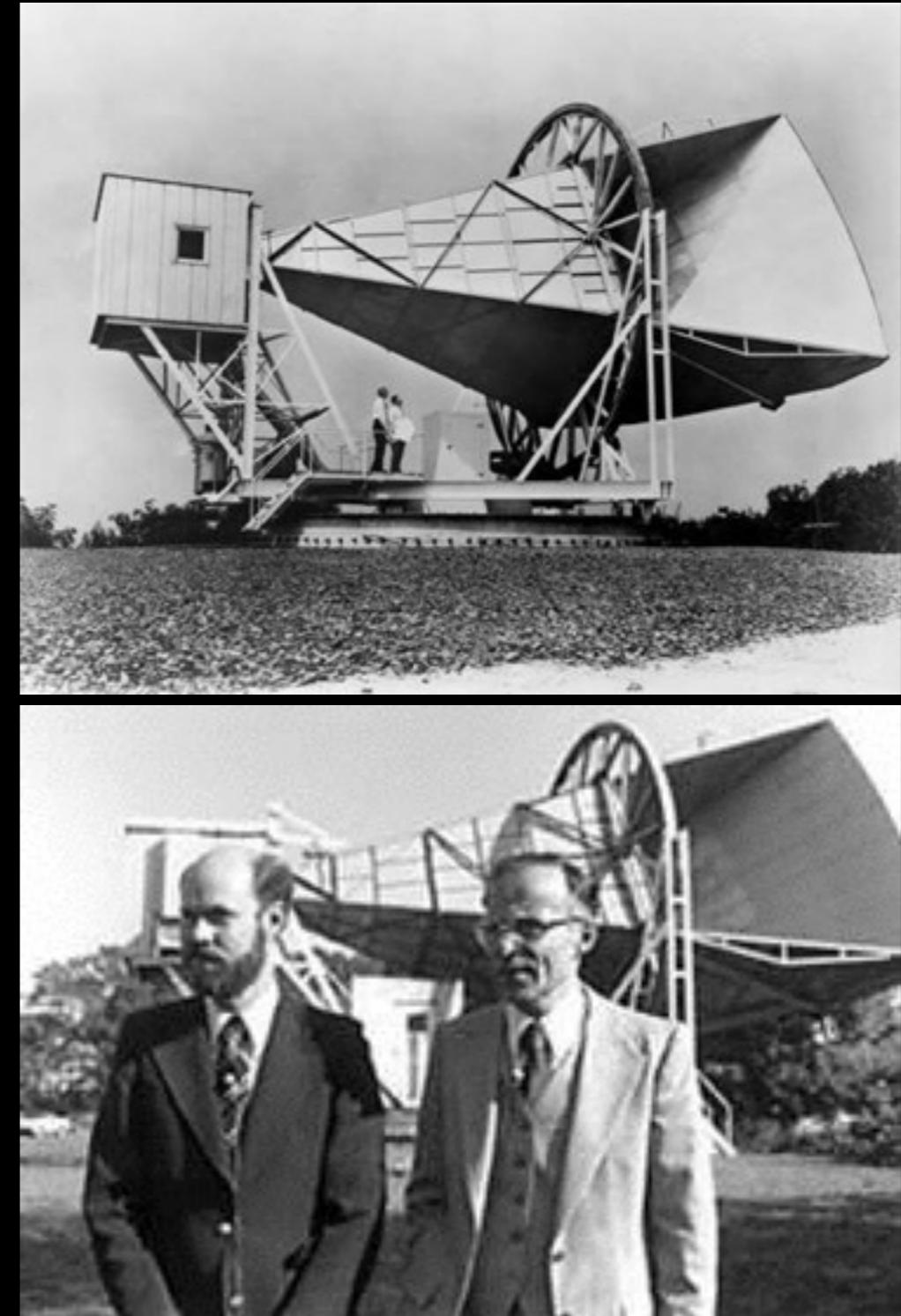


Dirac

BIG-BANG Y RADIACIÓN CÓSMICA DE FONDO



GEORGE GAMOW (1904-1968)
1948 – CMB /BIG BANG



ROBERT WILSON Y
ARNO PENZIAS (1964)

AHORA

5

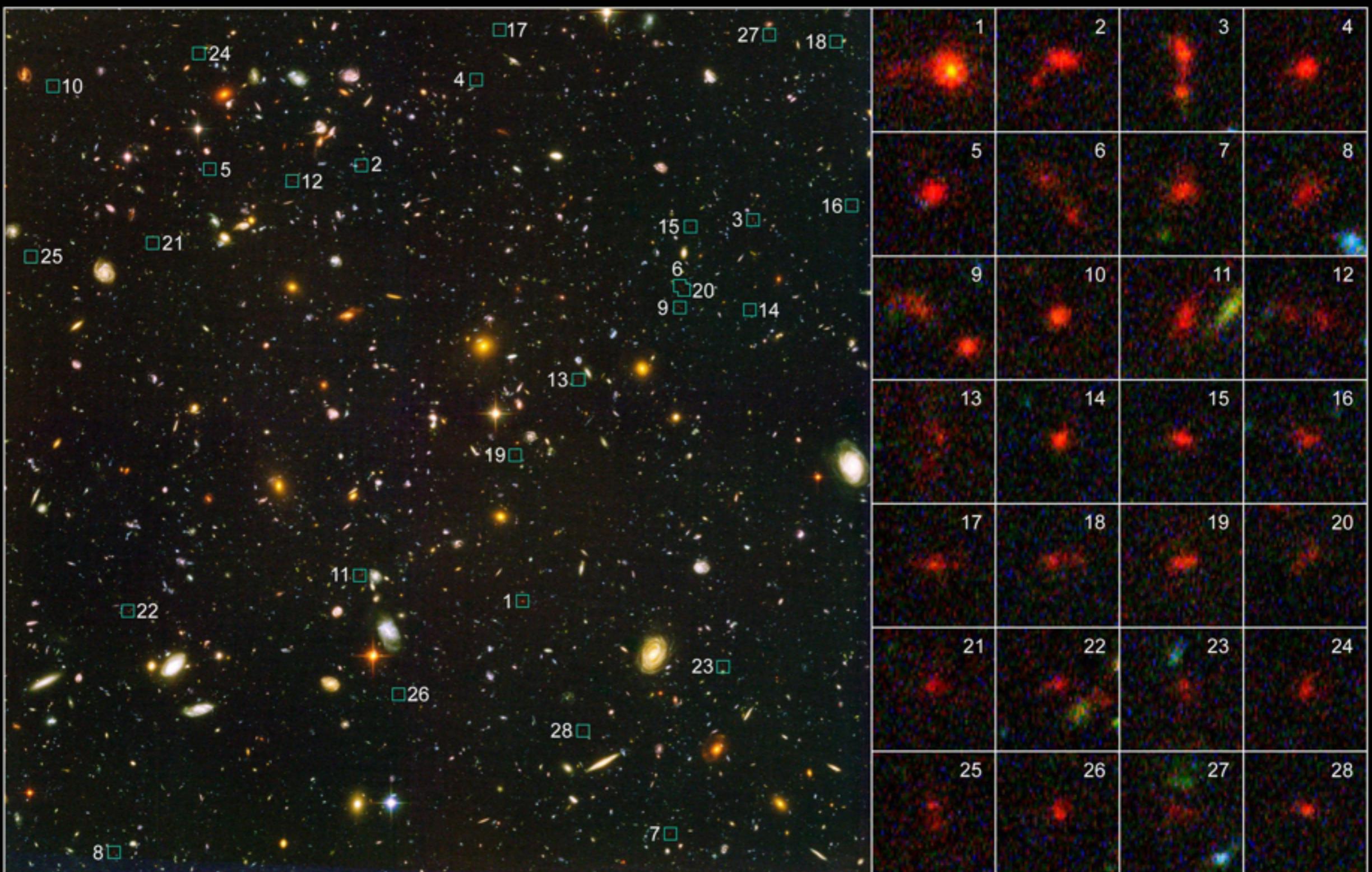
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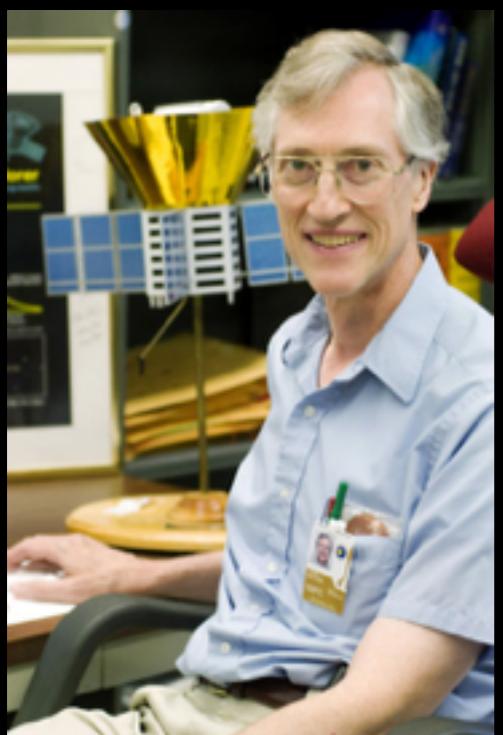
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DISTANCIA EN MILES DE MILLONES DE AÑOS LUZ

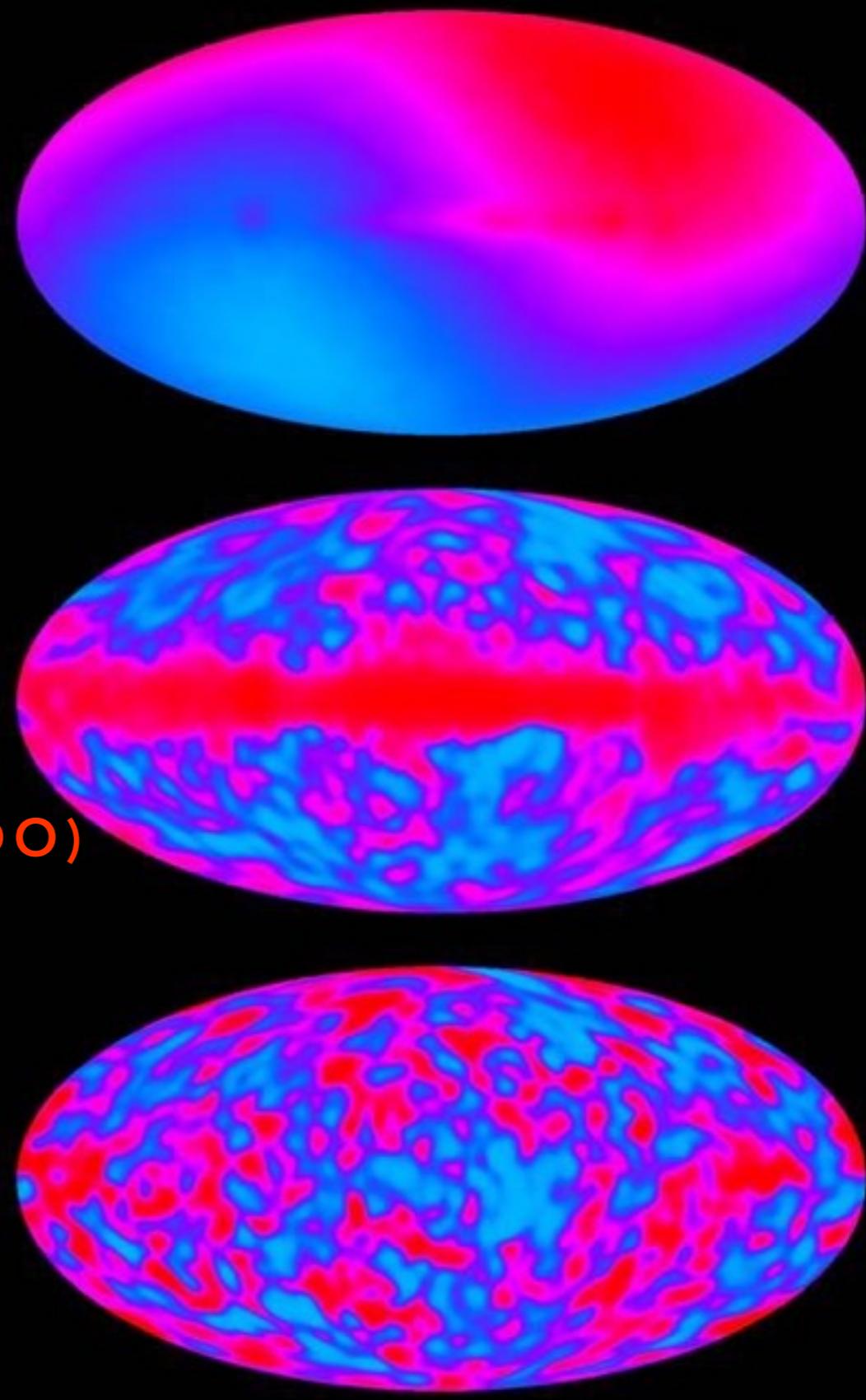
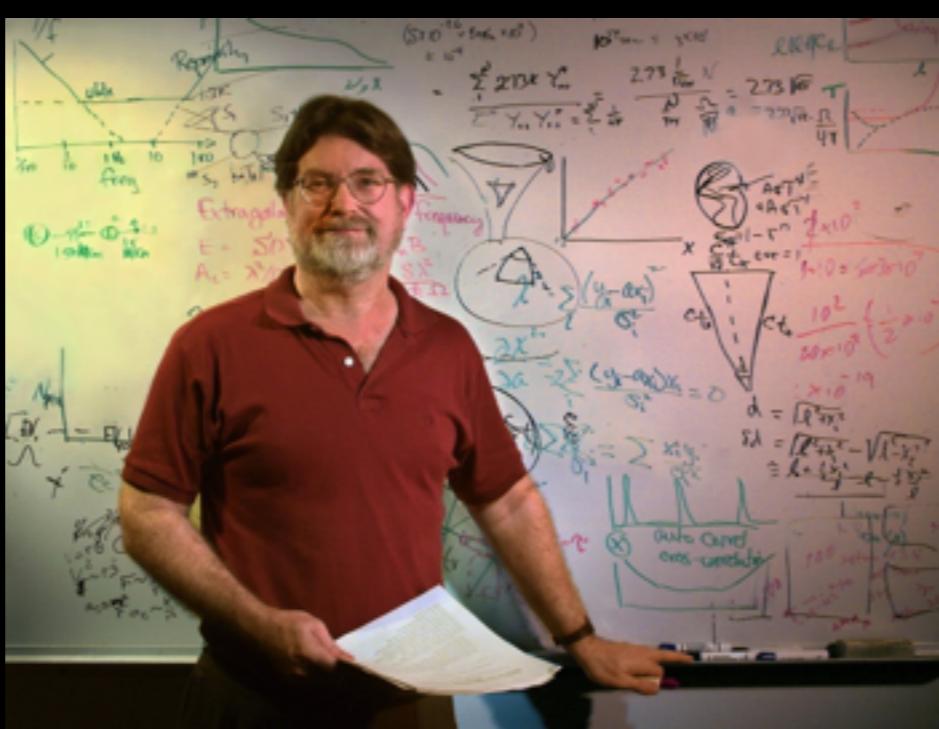


Distant Galaxies in the Hubble Ultra Deep Field
Hubble Space Telescope • Advanced Camera for Surveys

John C. Mather



George F. Smoot



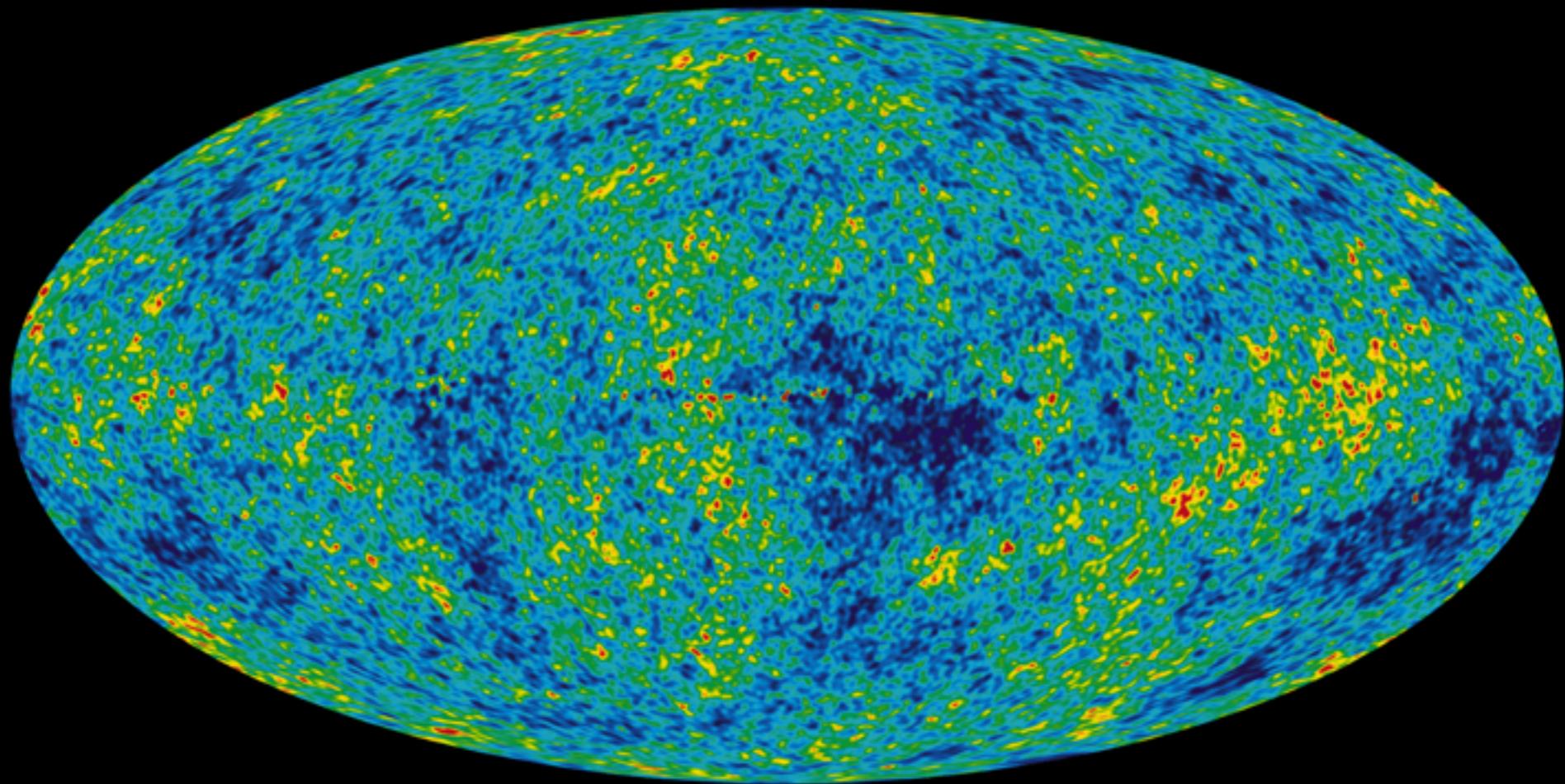
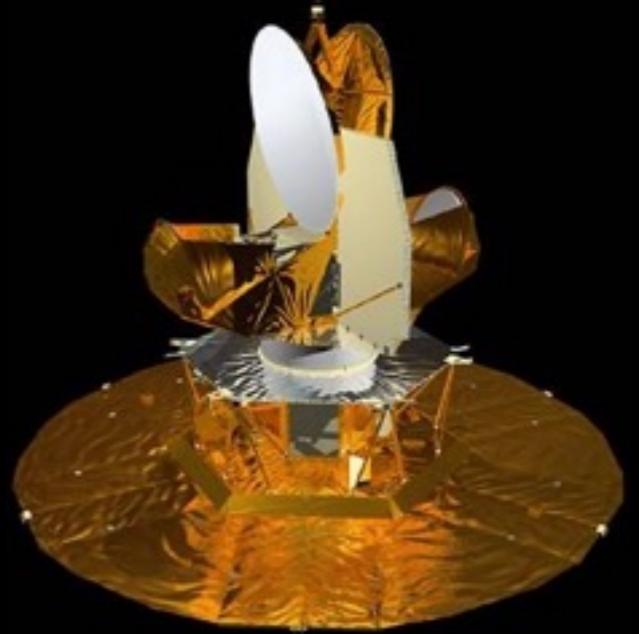
PREMIO NOBEL FÍSICA 2006 (COMPARTIDO)



COSMIC BACKGROUND
EXPLORER (COBE) - 1989

MAPA DEL CIELO
REALIZADO POR
COBE

**WILKINSON MICROWAVE
ANISOTROPY PROBE (WMAP)**
**NASA 1995 – LANZADO 2001 – AÚN
EN ÓRBITA (L2)**



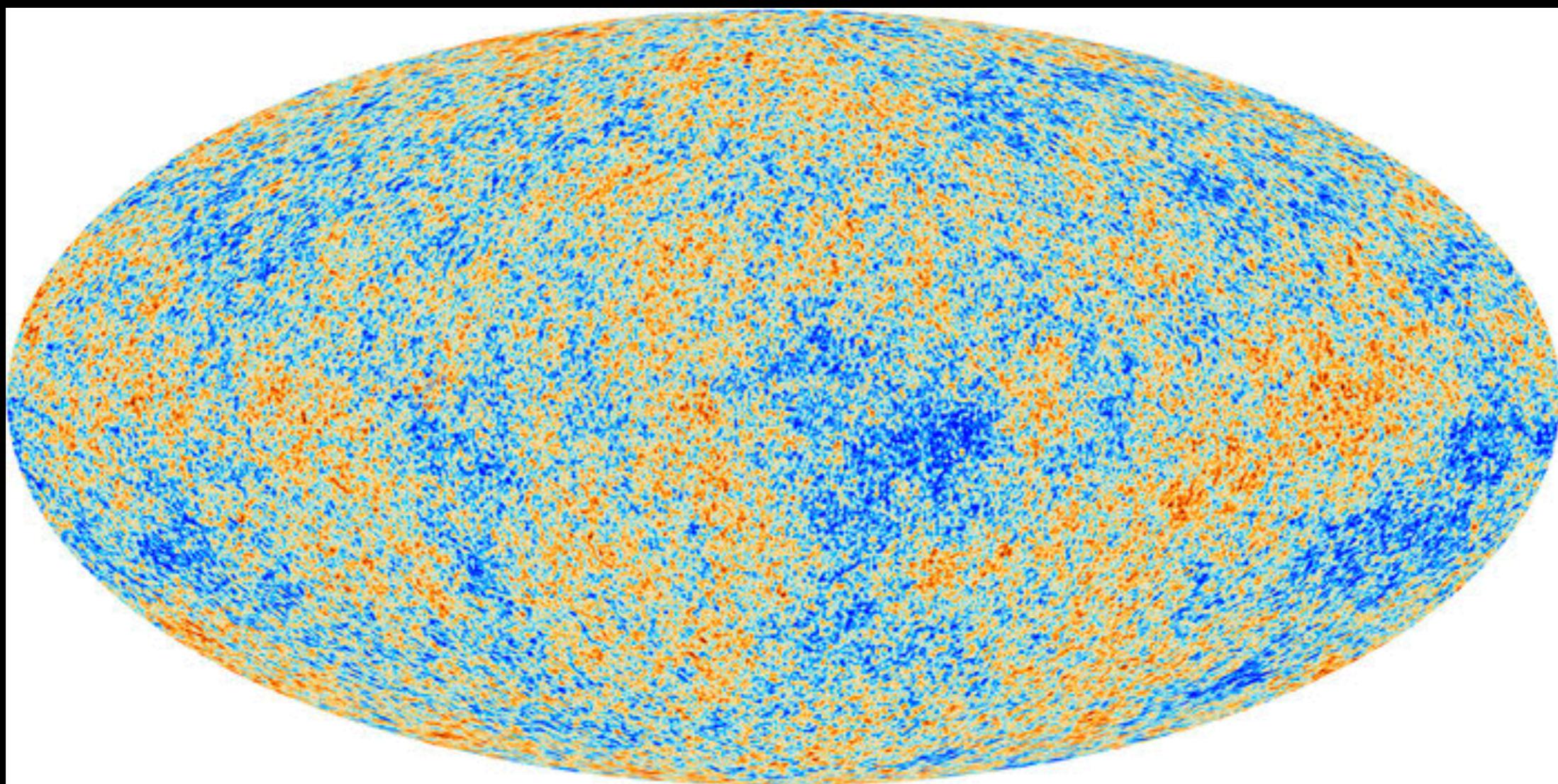
MAPA DEL CIELO REALIZADO POR WMAP



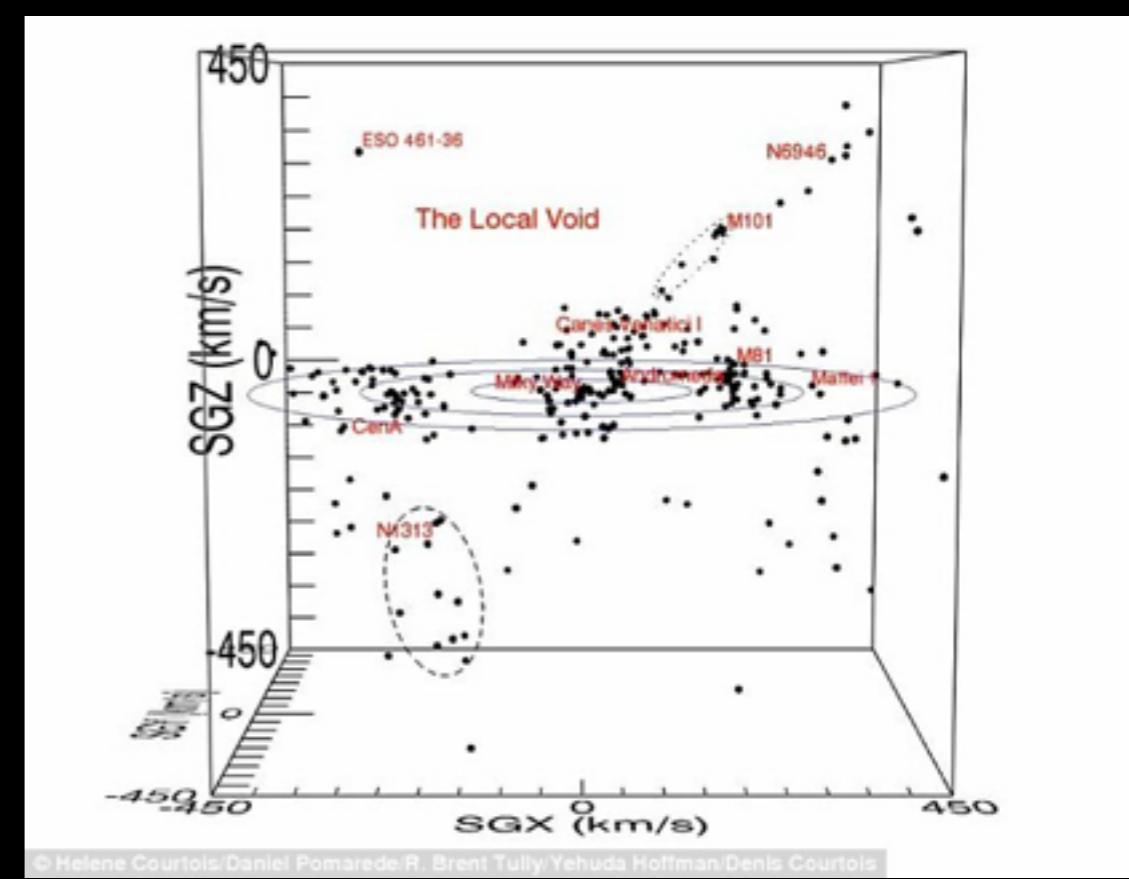
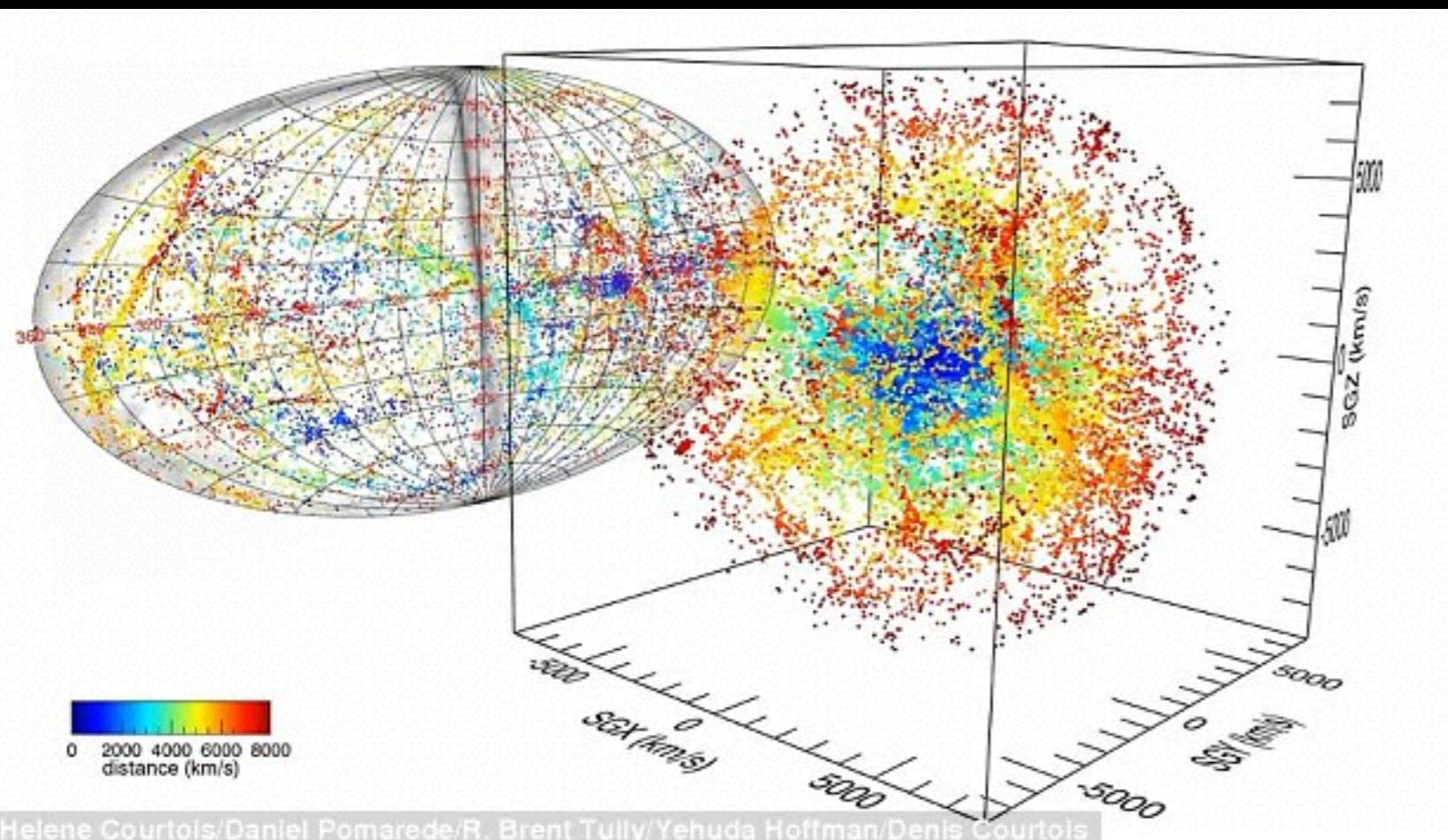
PLANCK

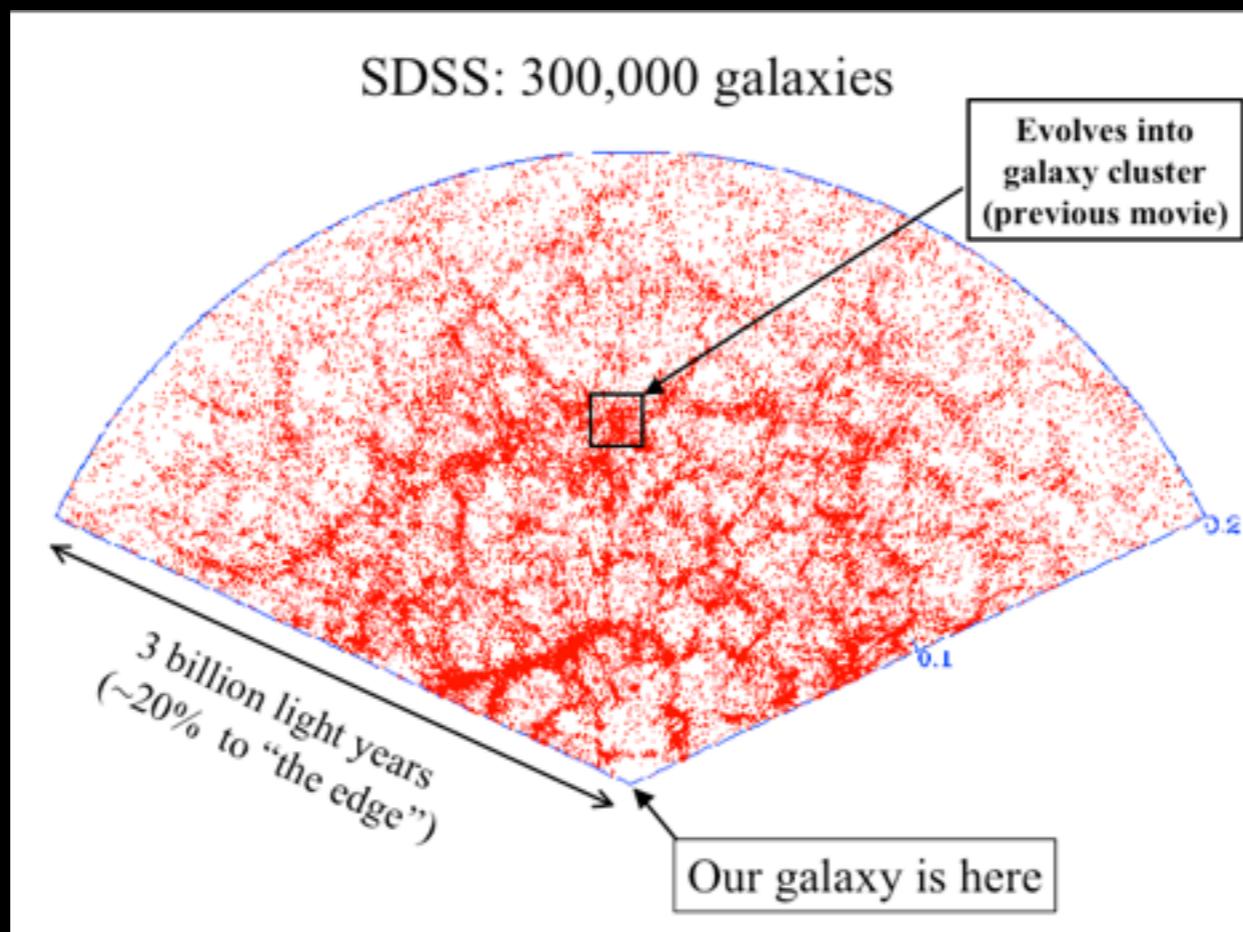
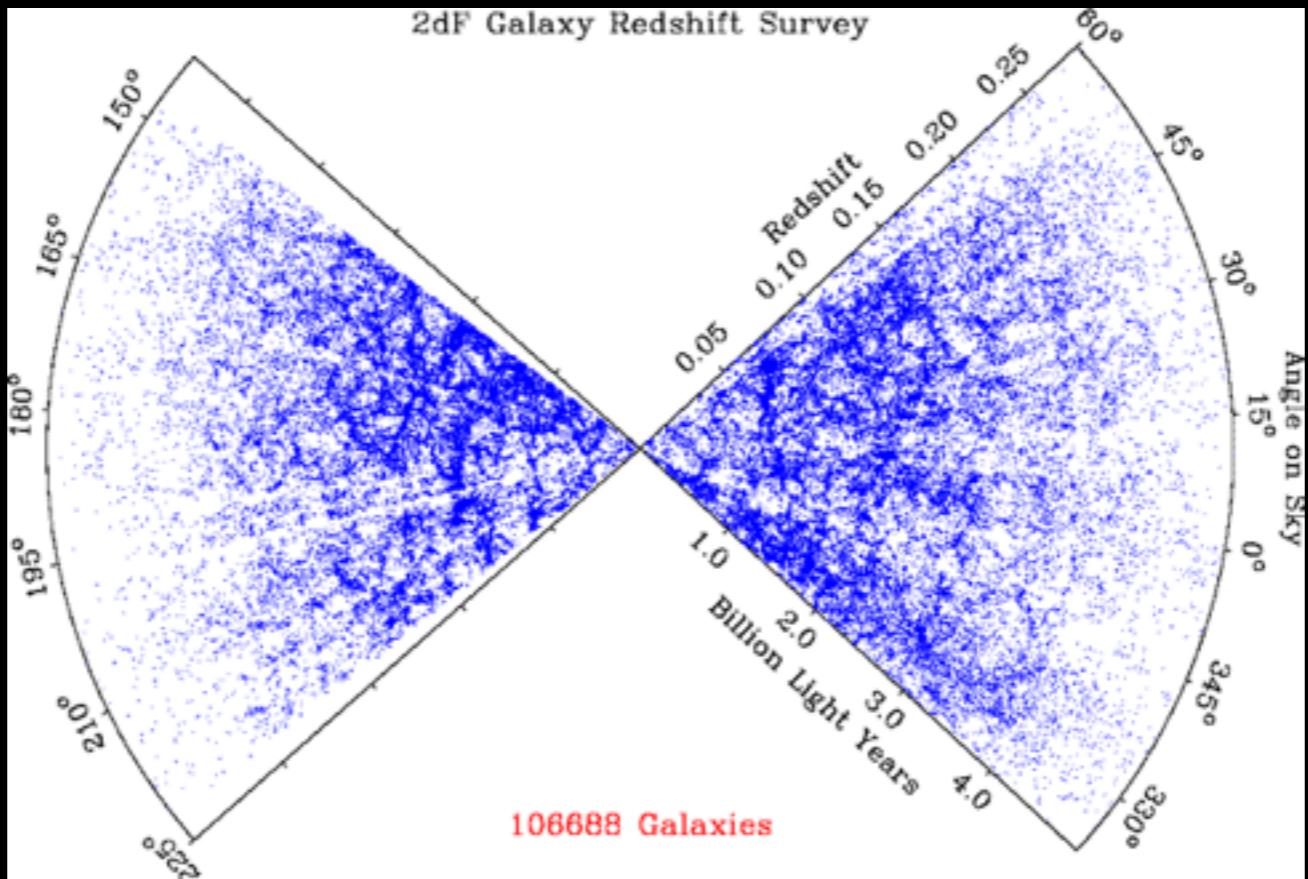


G. SMOOT JUNTO A PLANCK

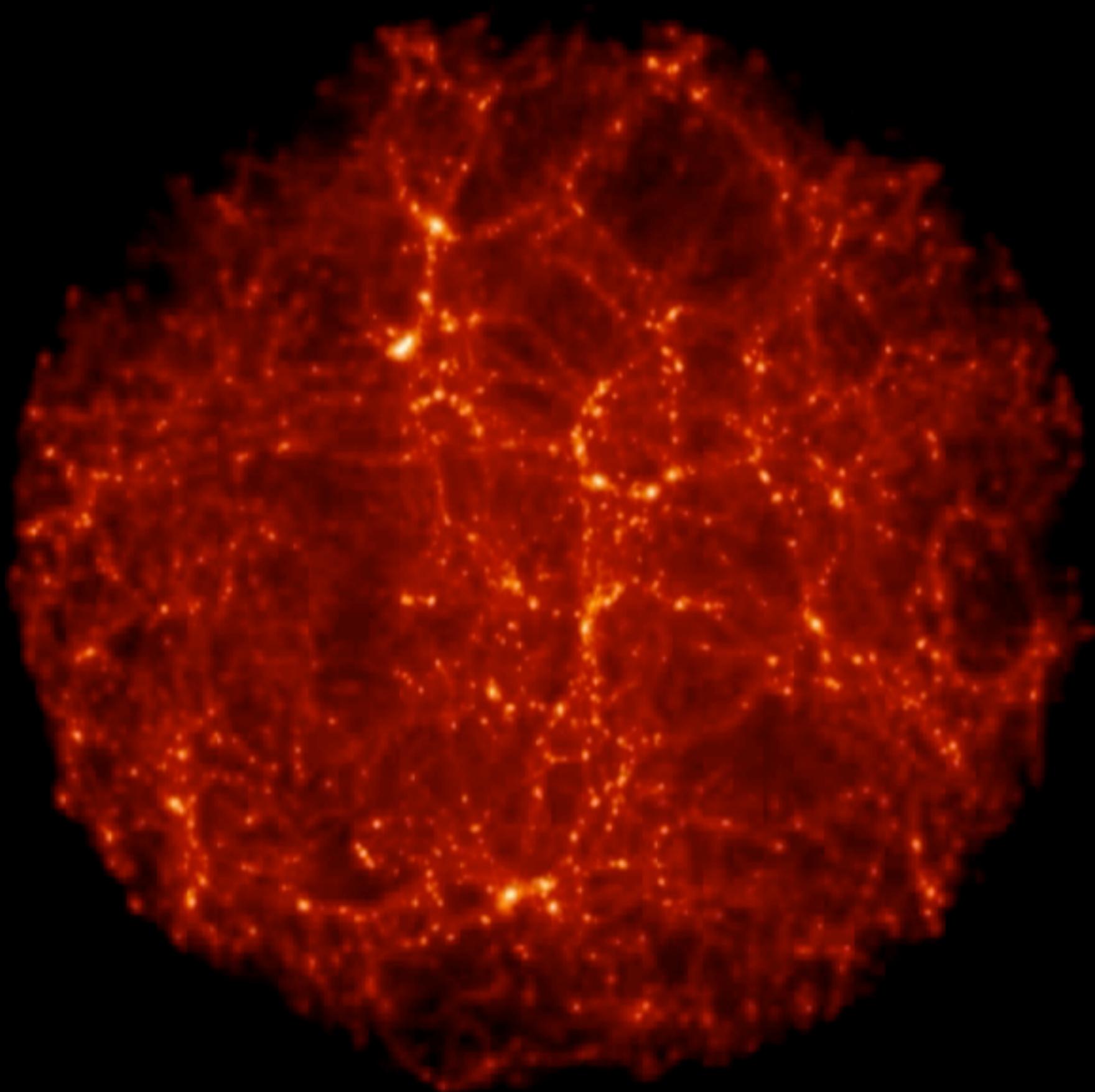


La distribución de galaxias cercanas





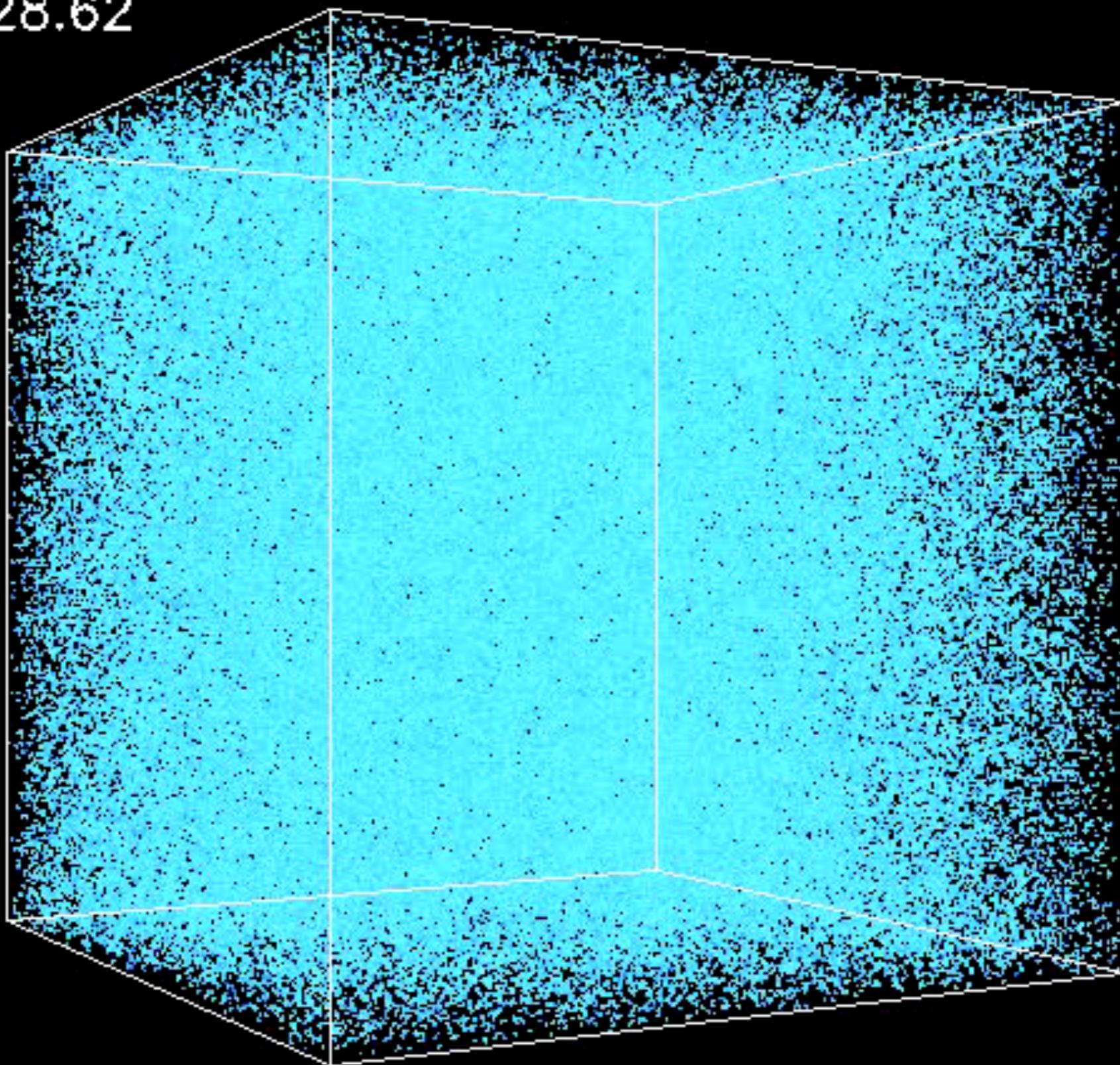
Survey de Galaxias



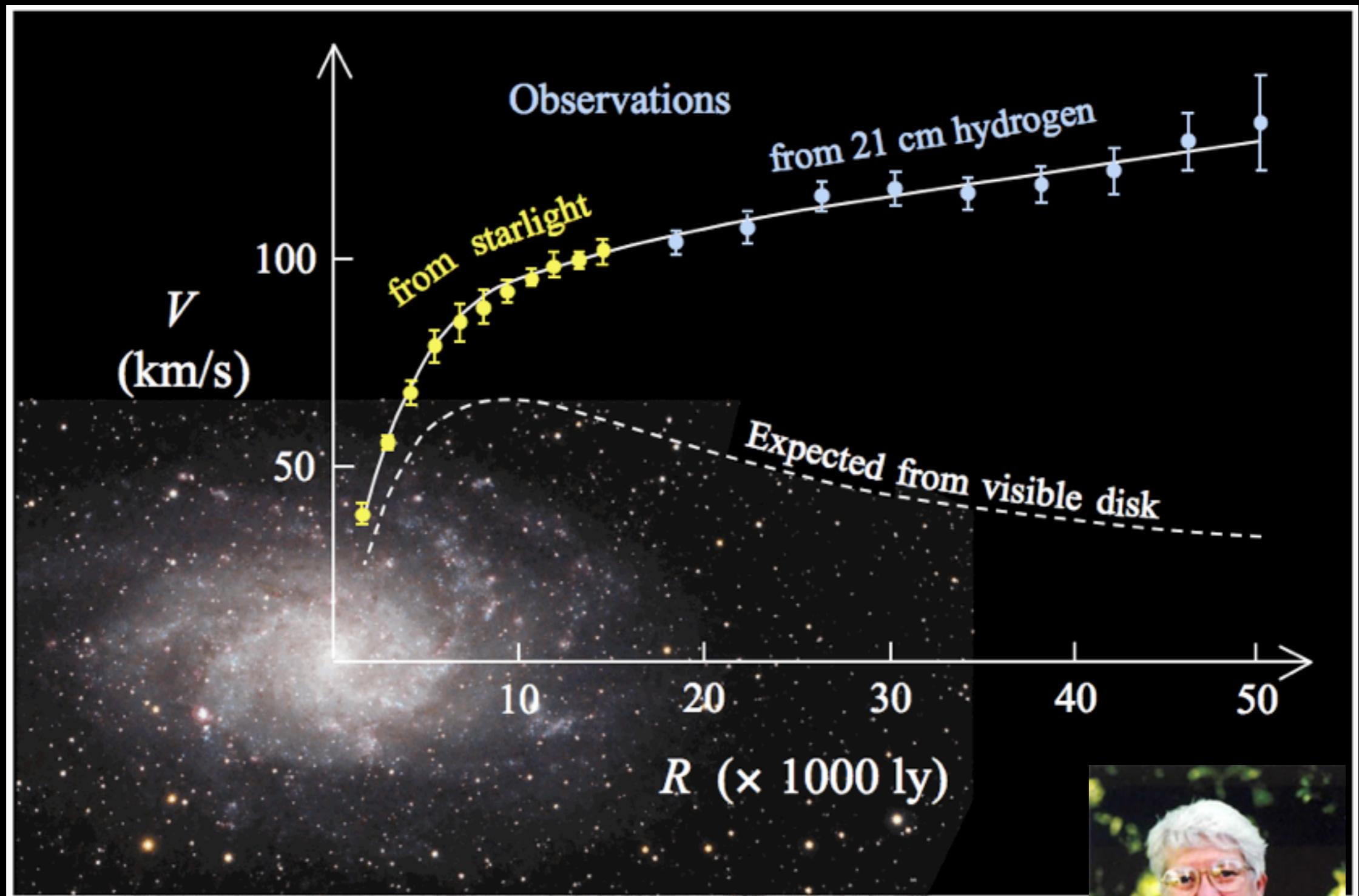
Visualización Simulada de nuestro entorno cósmico

Simulación Evolución Universo

Z=28.62



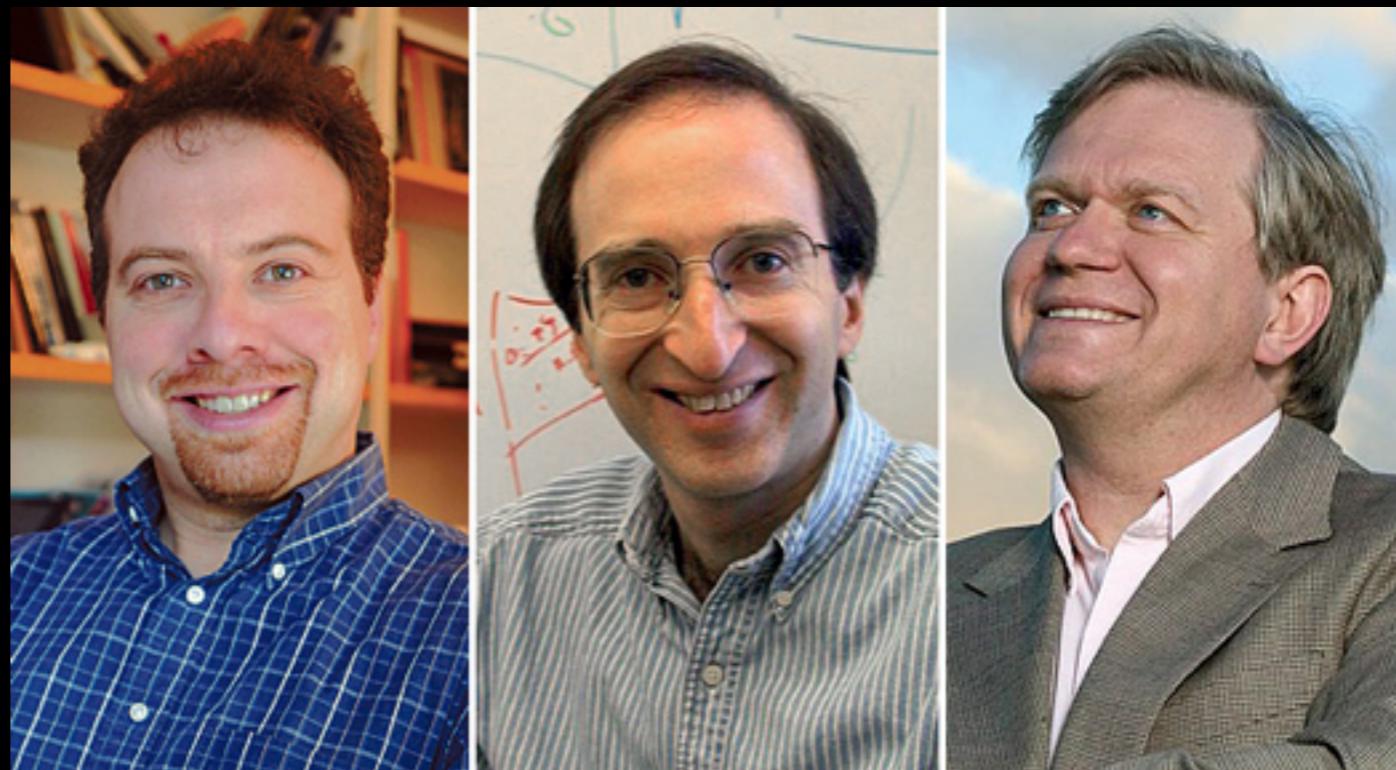
Materia Obscura



Vera Rubin



Dark Energy



Riess, Perlmutter, Schmidt

