



Sessão Astronomia

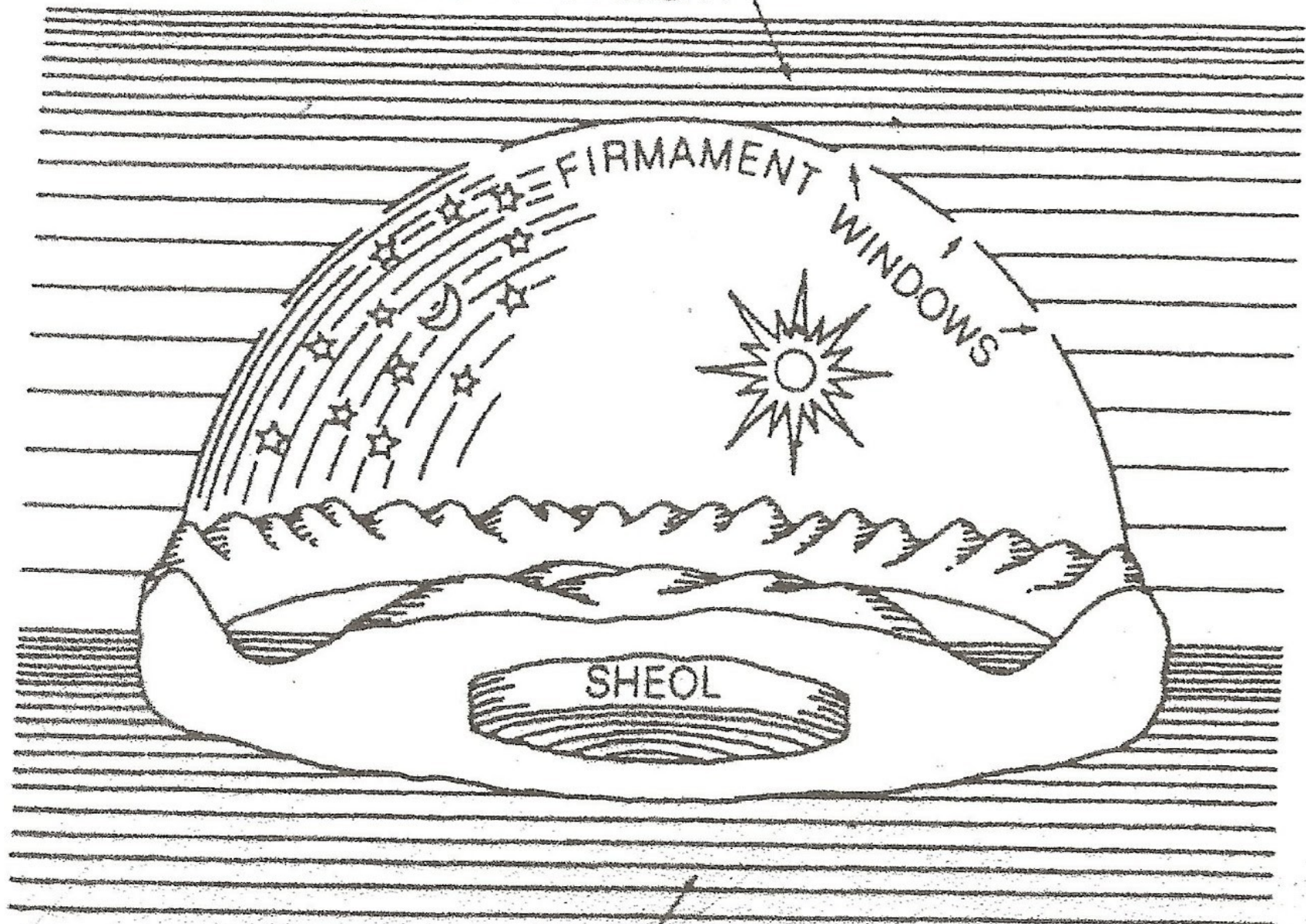




O Tamanho do Universo

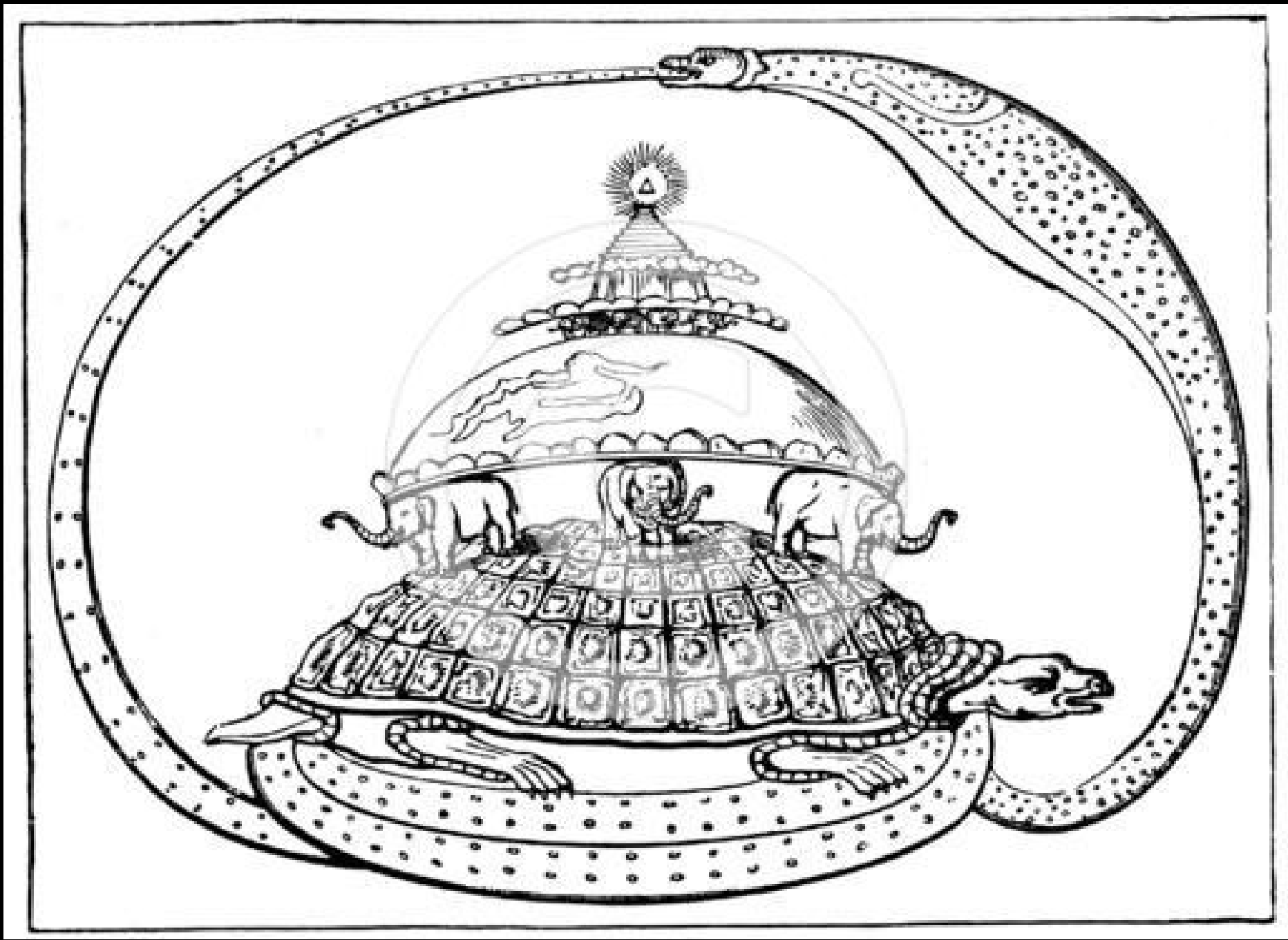
Joseana S. Soares

WATERS ABOVE THE FIRMAMENT



THE GREAT DEEP









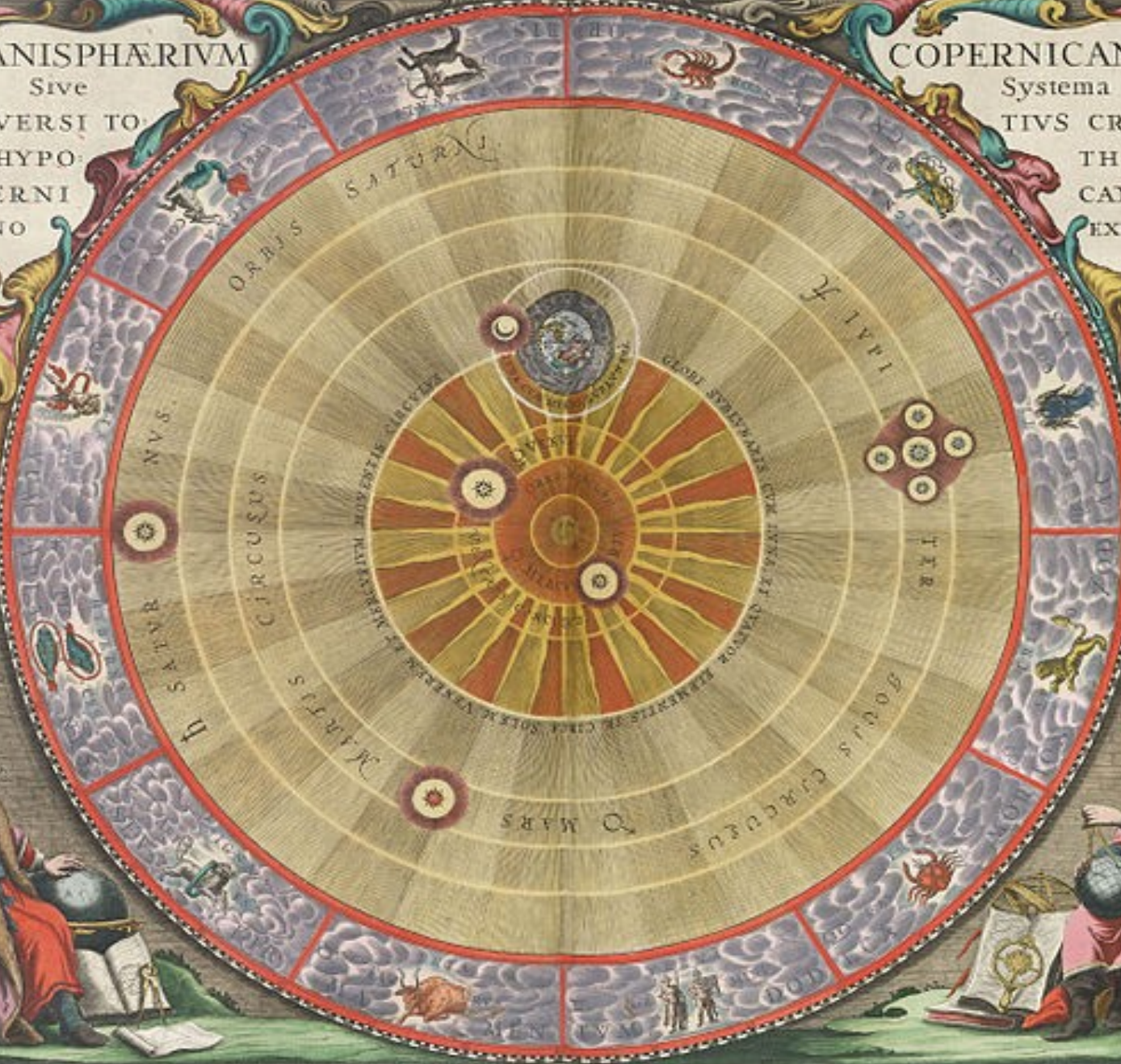
Ptolemaic Planisphere. Anthony Collet, Harmonia Macrocosmica, 1661 (later reprint)

PLANISPHERIVM

Sive
VNIVERSI TO
EX HYPO
COPERNI
PLANO

COPERNICANVM

Systema
TIVS CREATI
THESI
CANA IN
EXHIBITVM

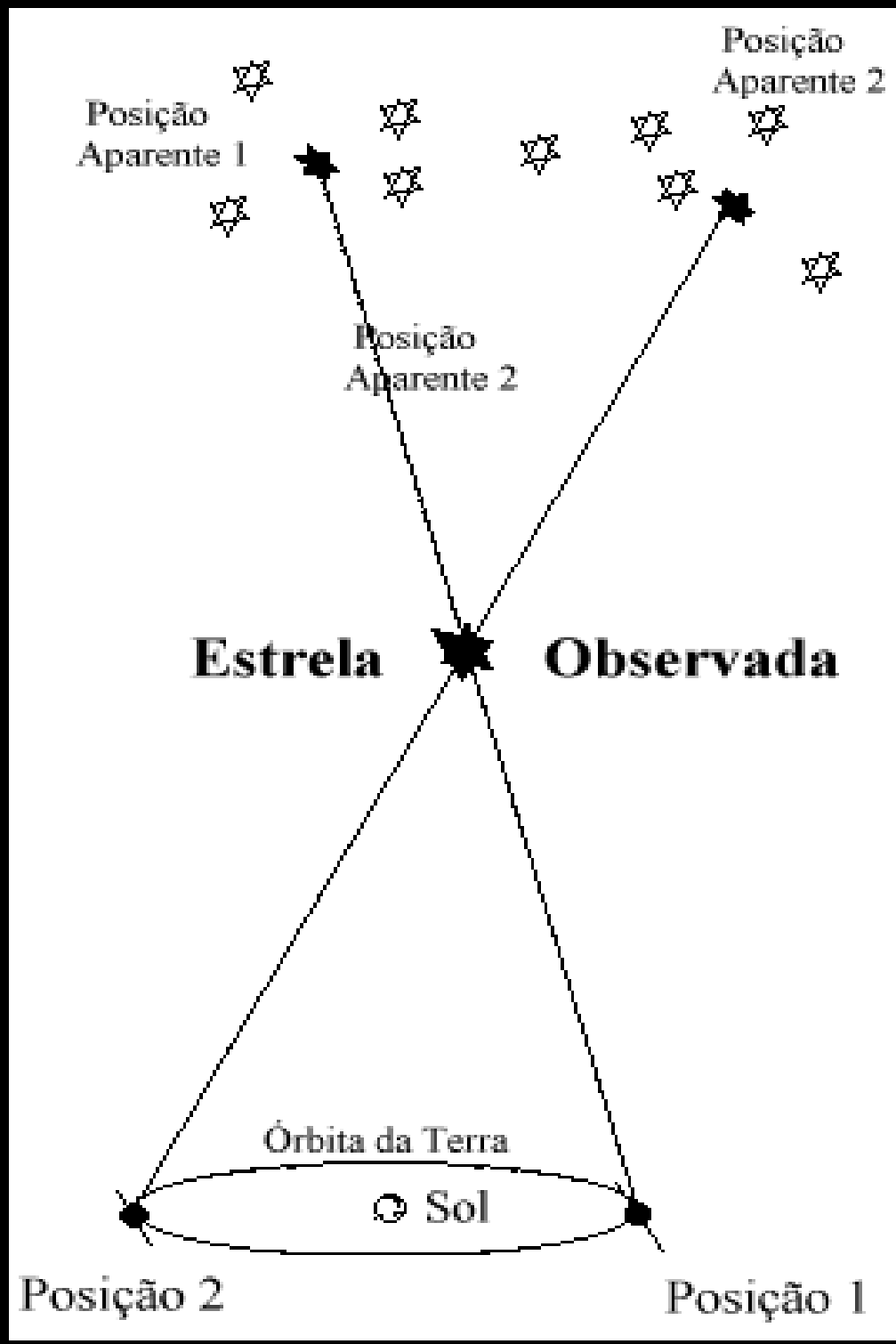






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***Medindo
Distâncias***

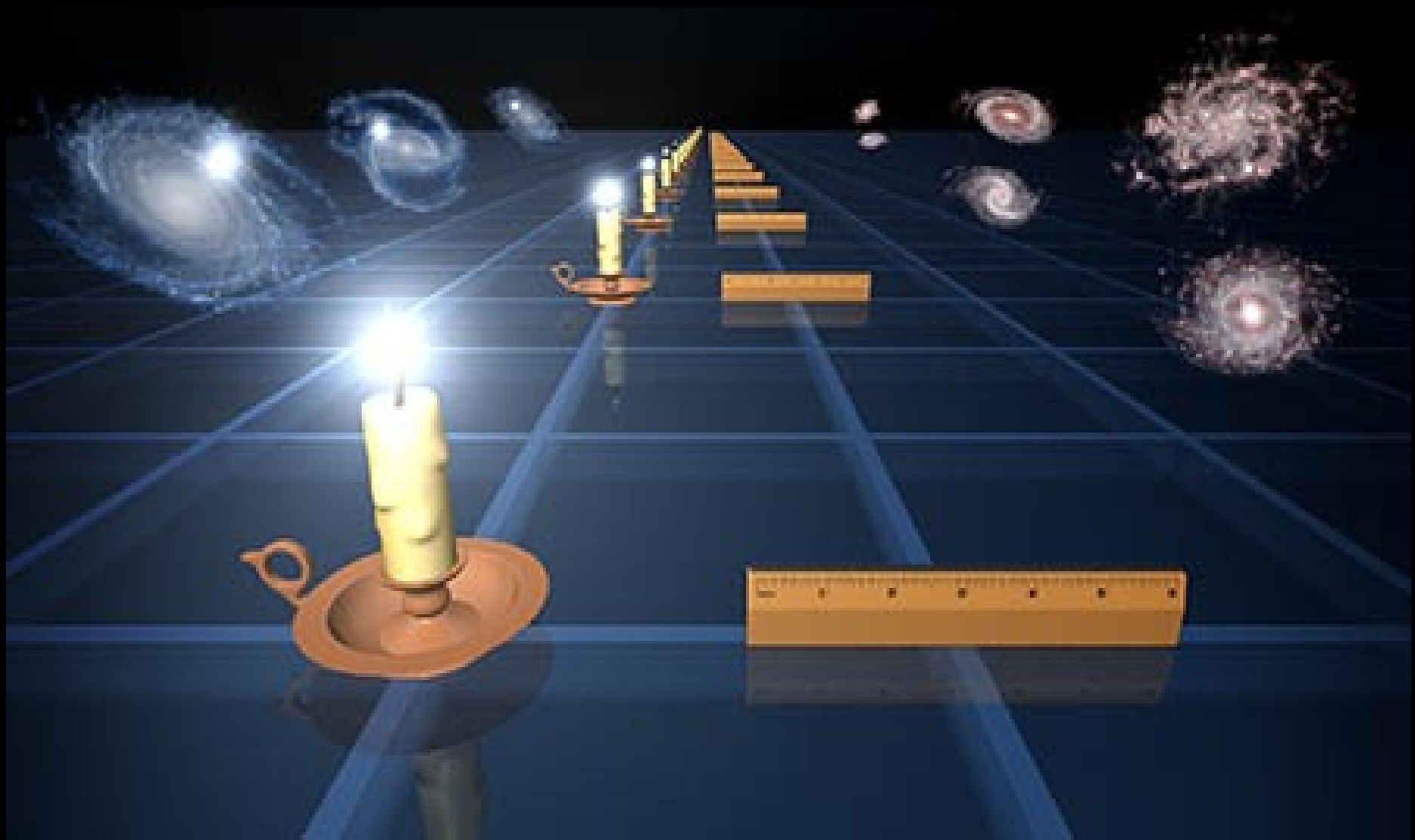


Friedrich Bessel



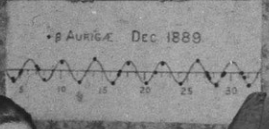


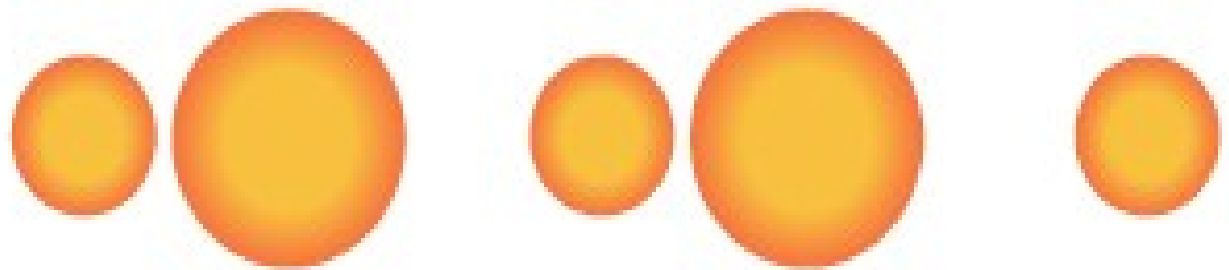
U b i et O r b i



Henrietta Leavitt







Time



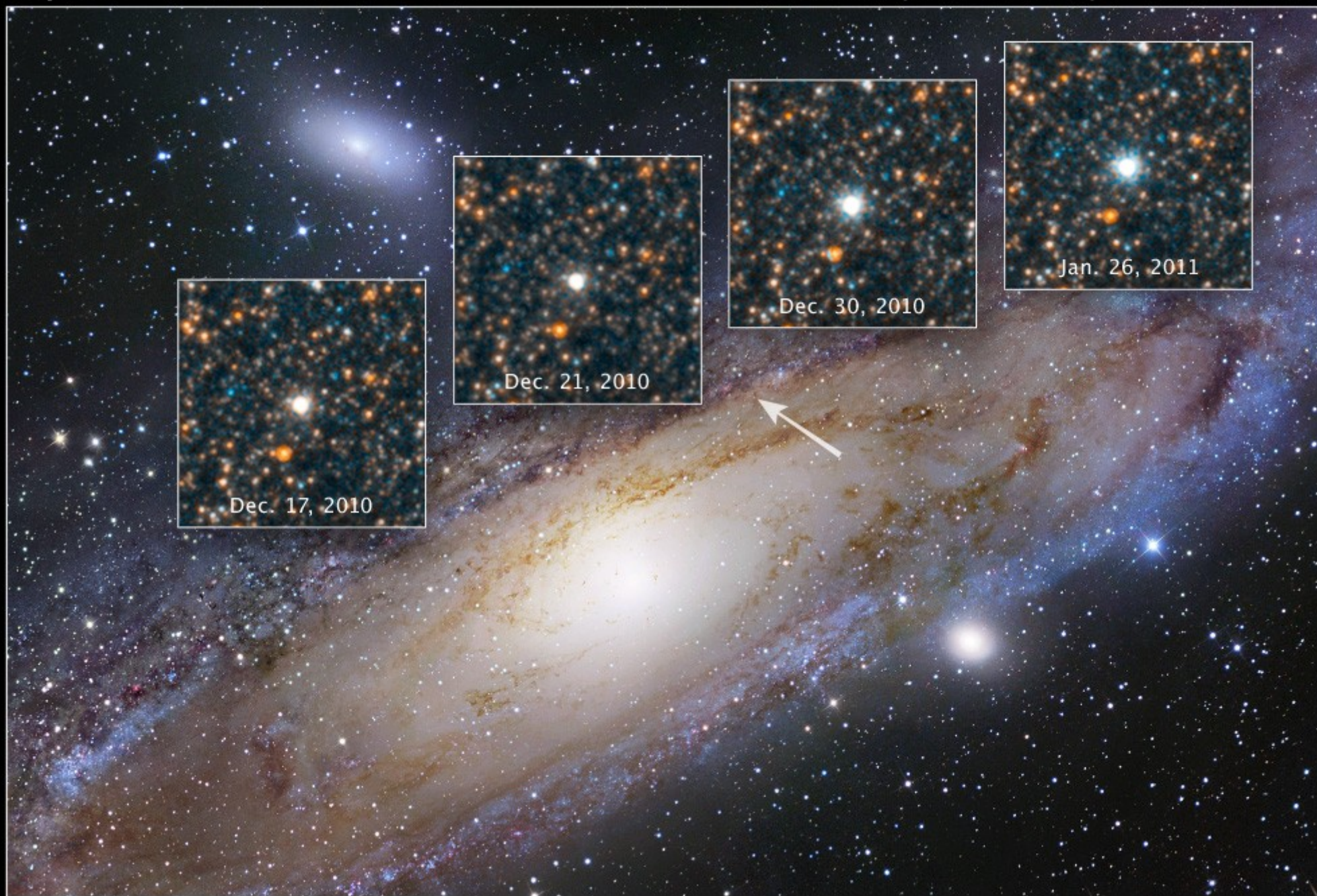
Edwin Hubble



Christoph Malin

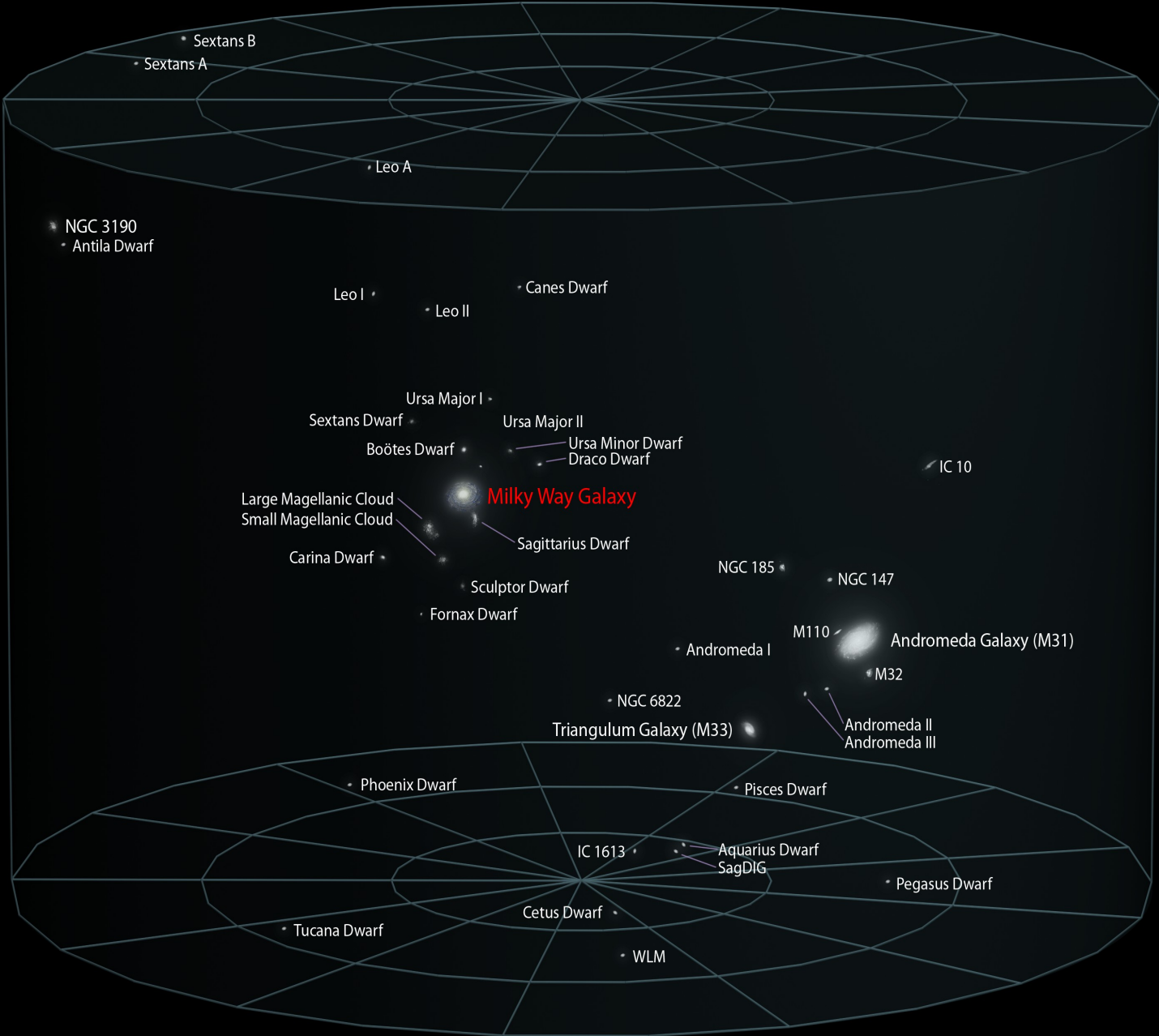
Cepheid Variable Star V1 in M31

Hubble Space Telescope ■ WFC3/UVIS



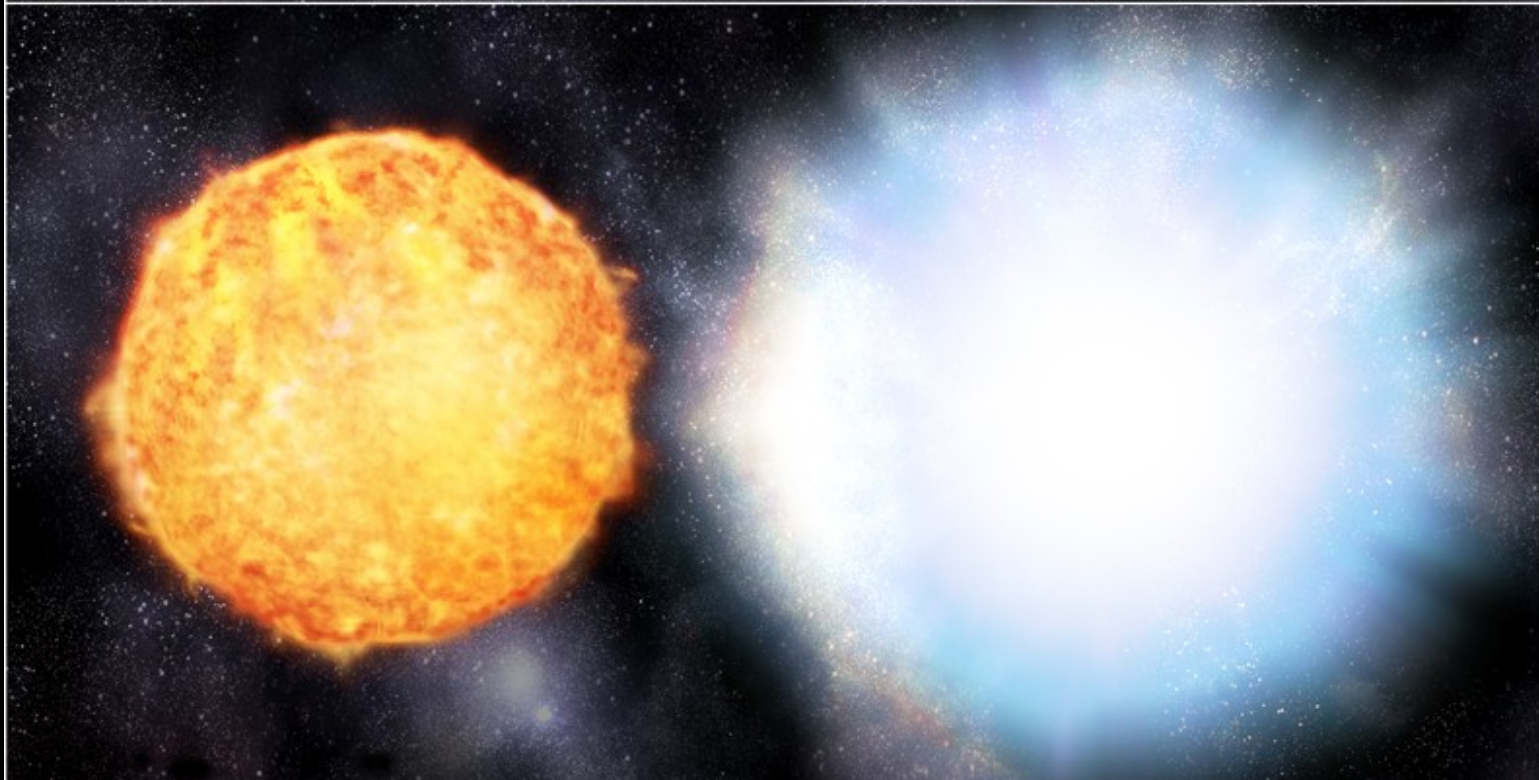
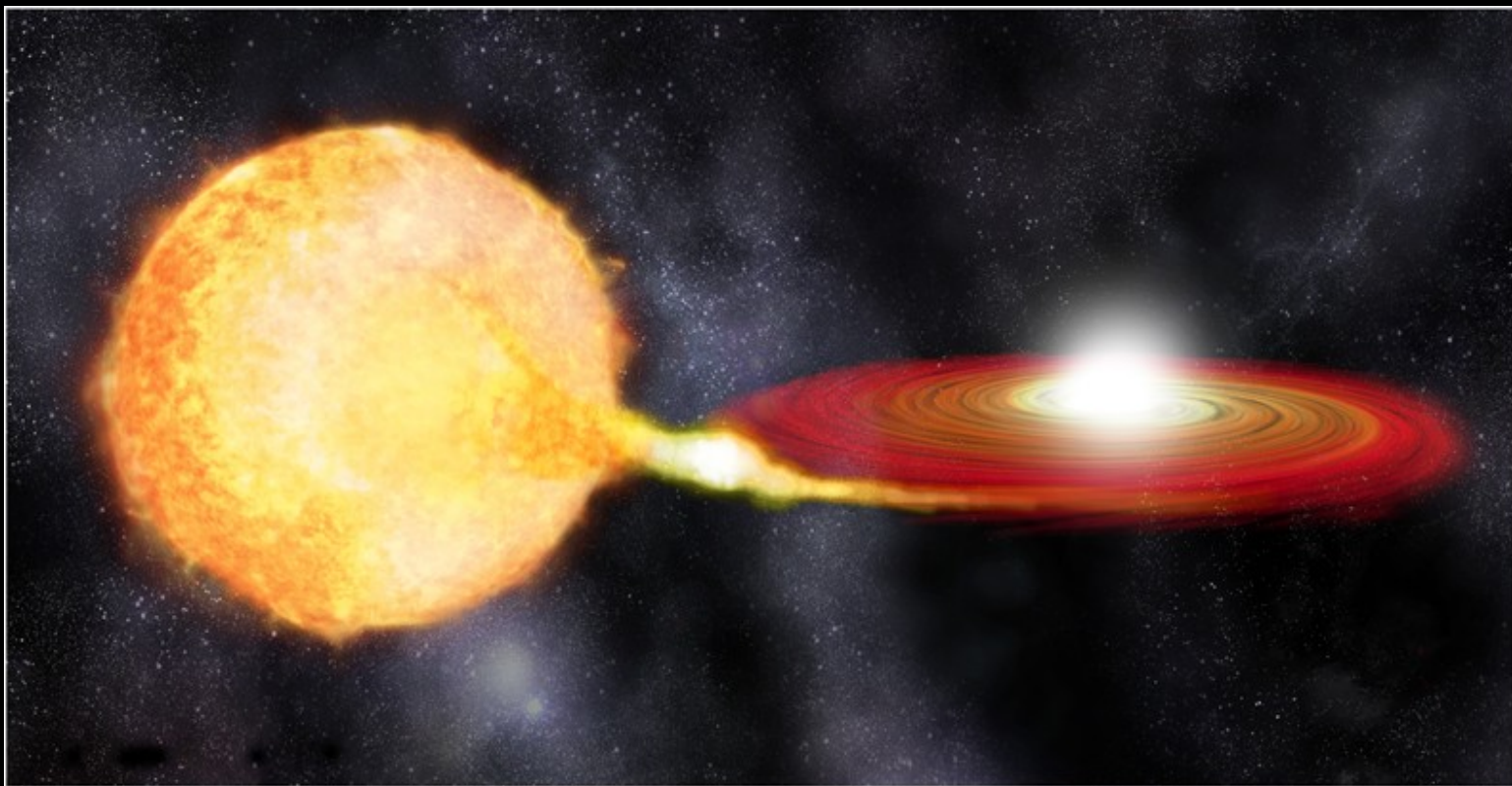


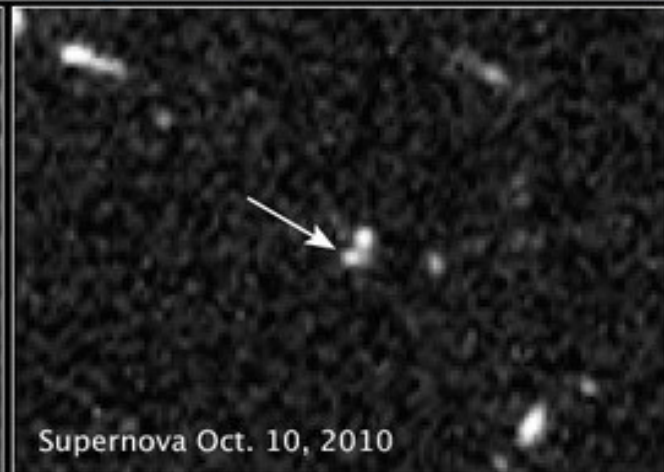
Local Galactic Group



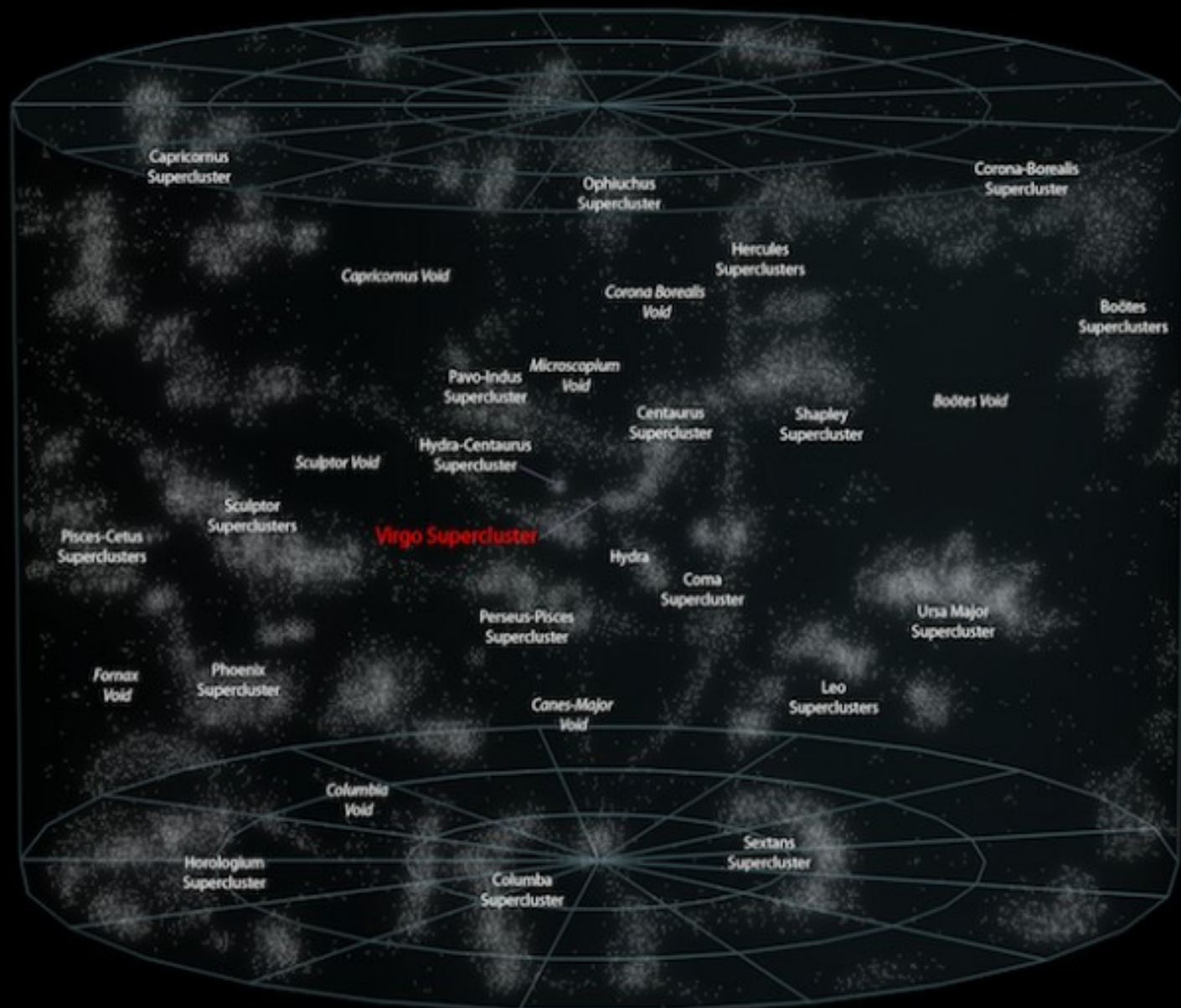




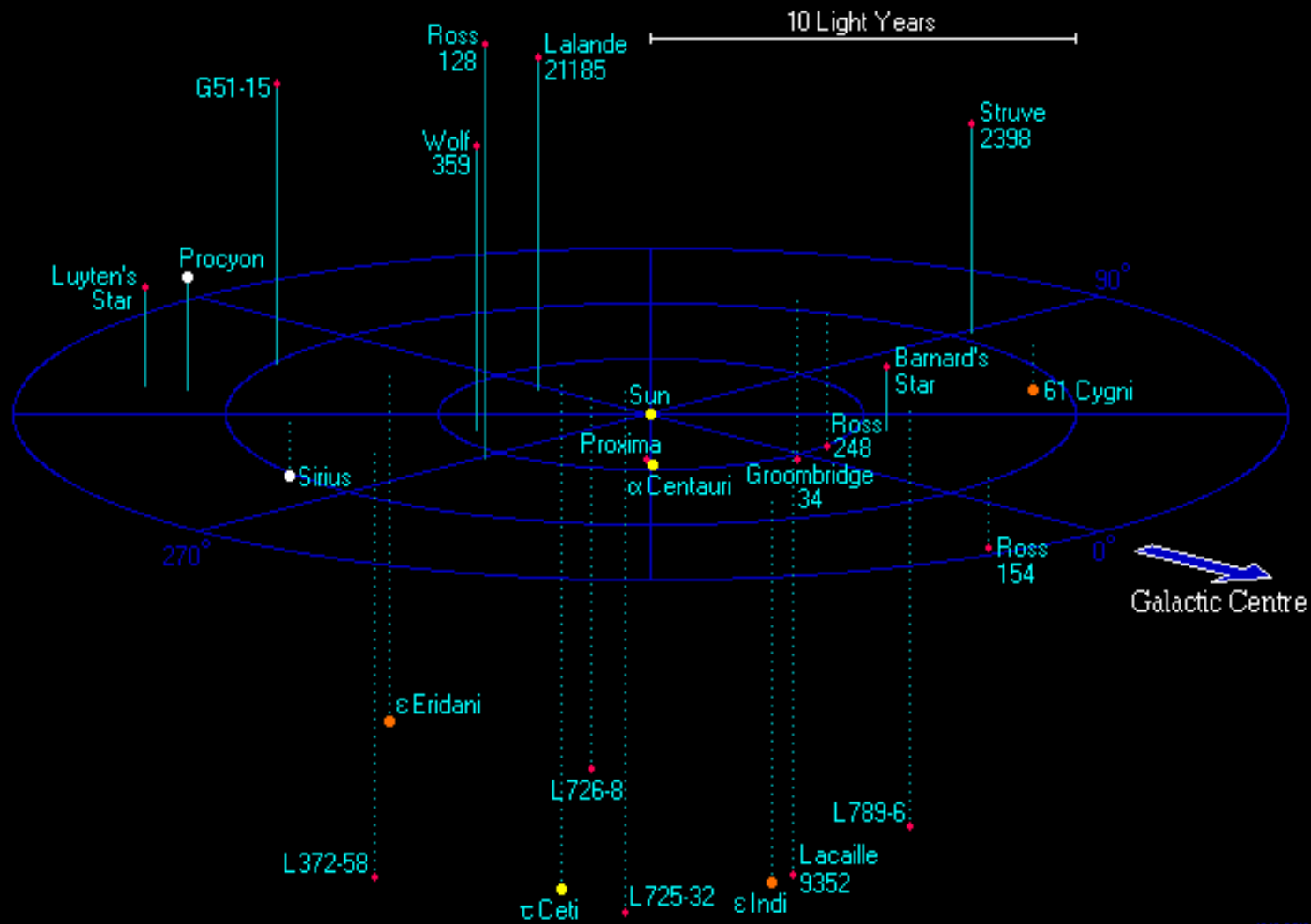


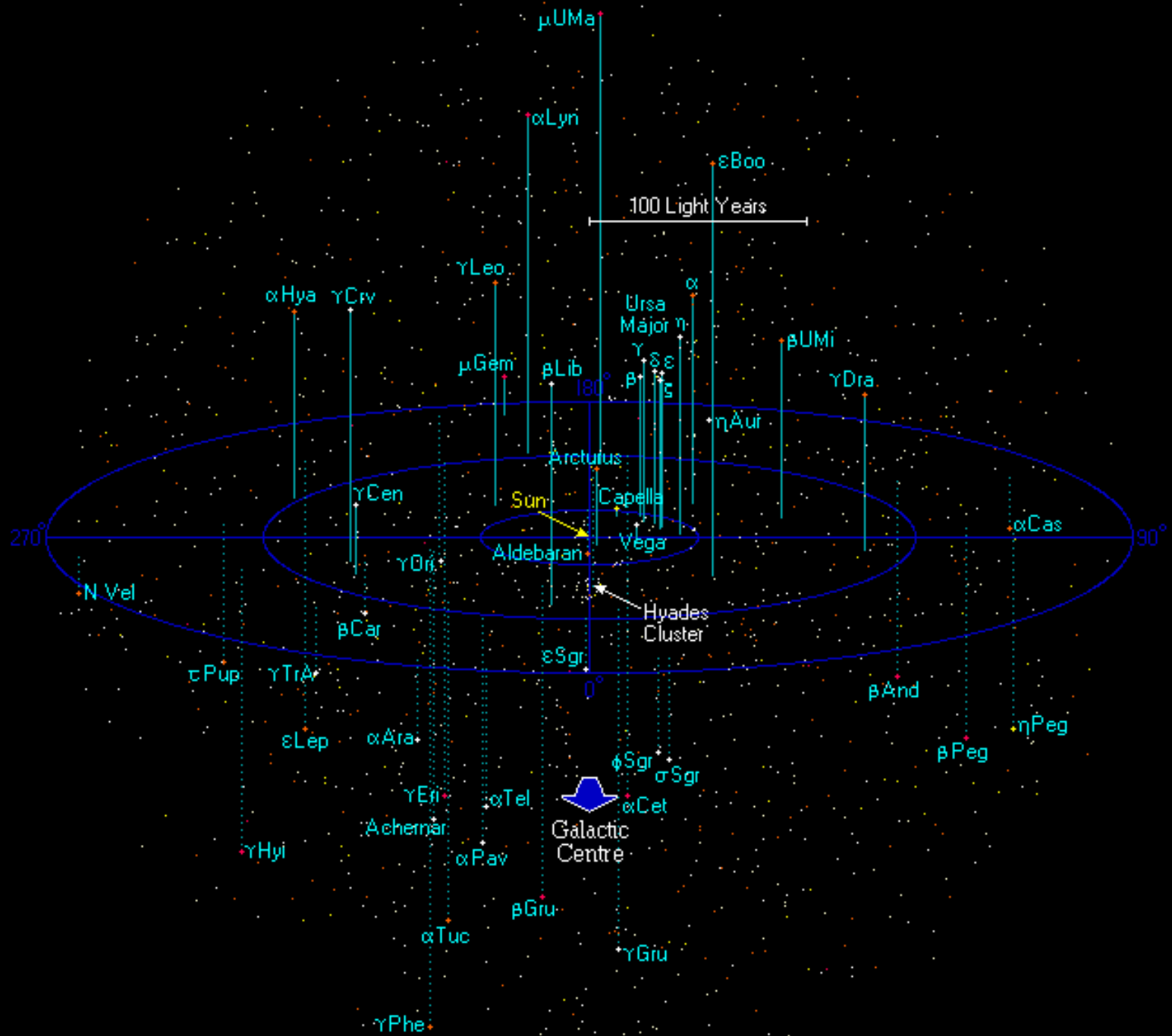


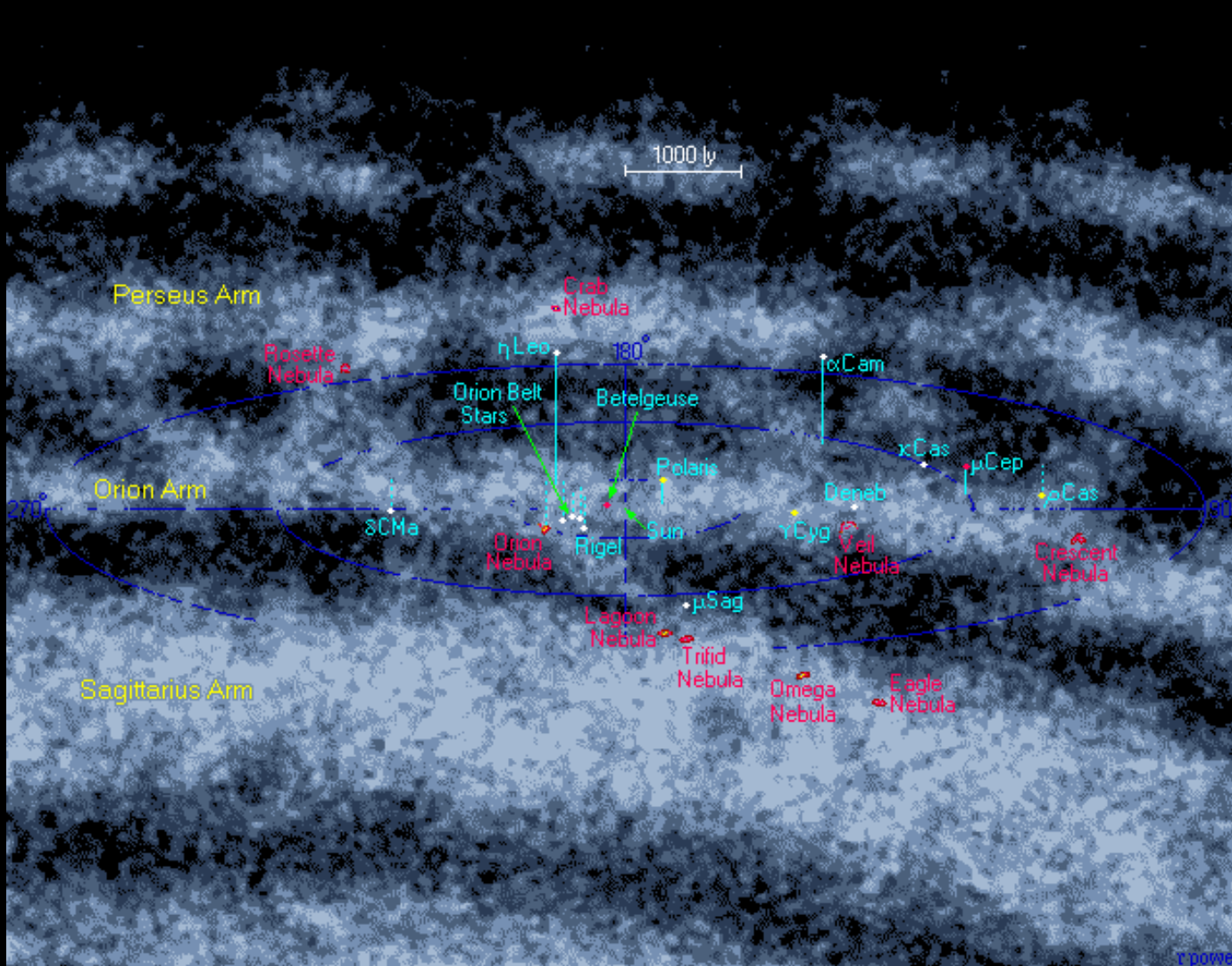
Local Superclusters

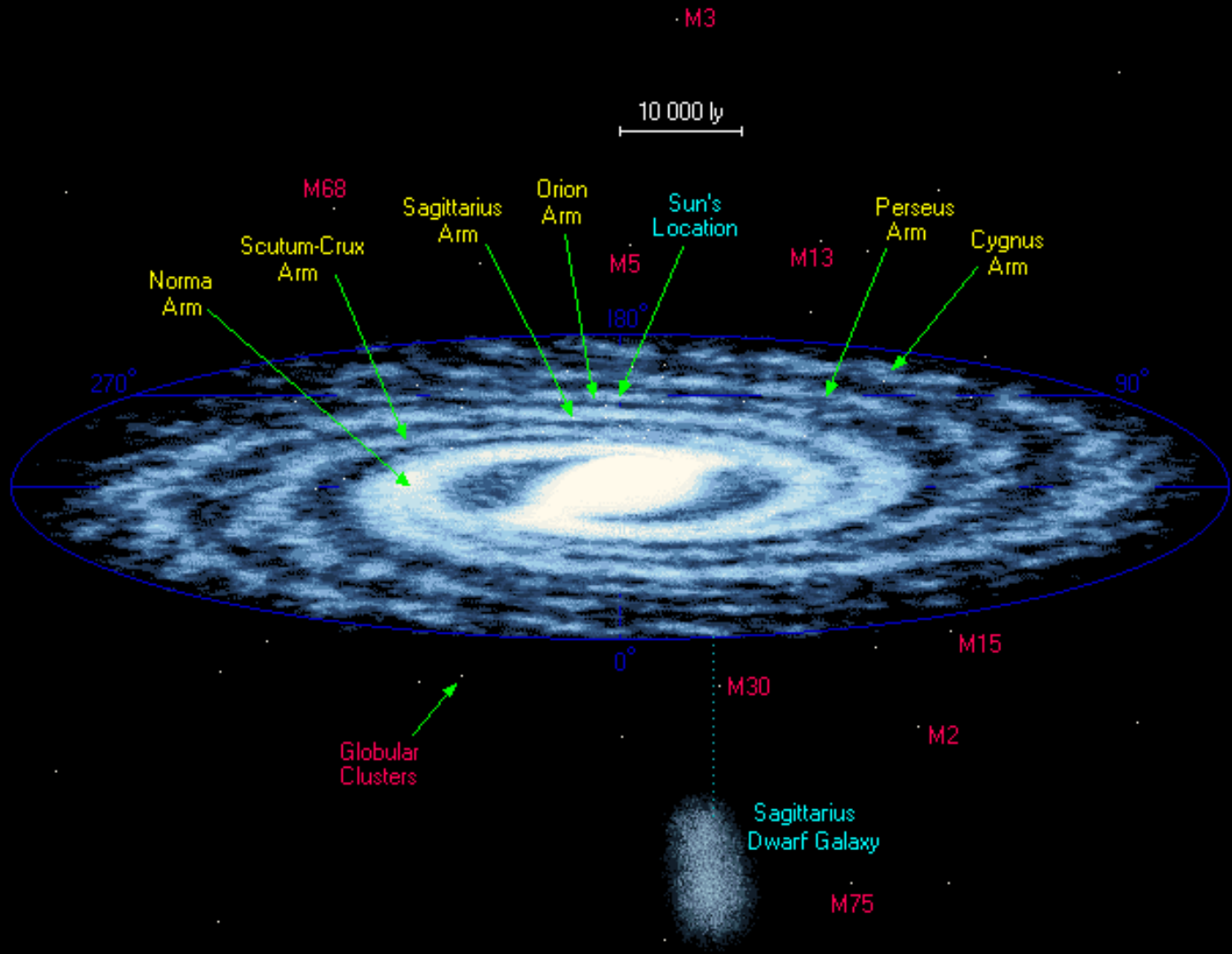


***Nosso Lugar
no Universo***

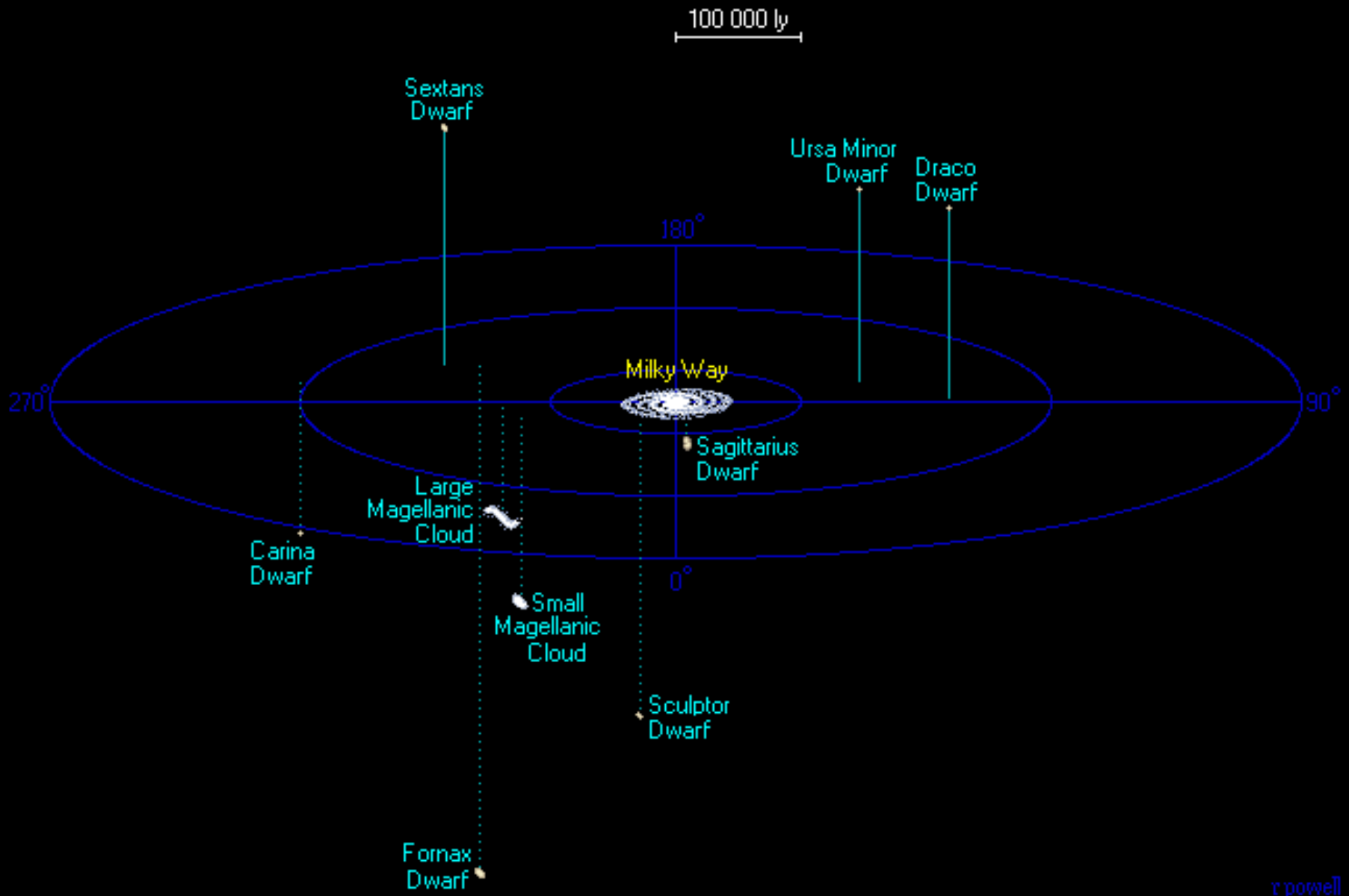


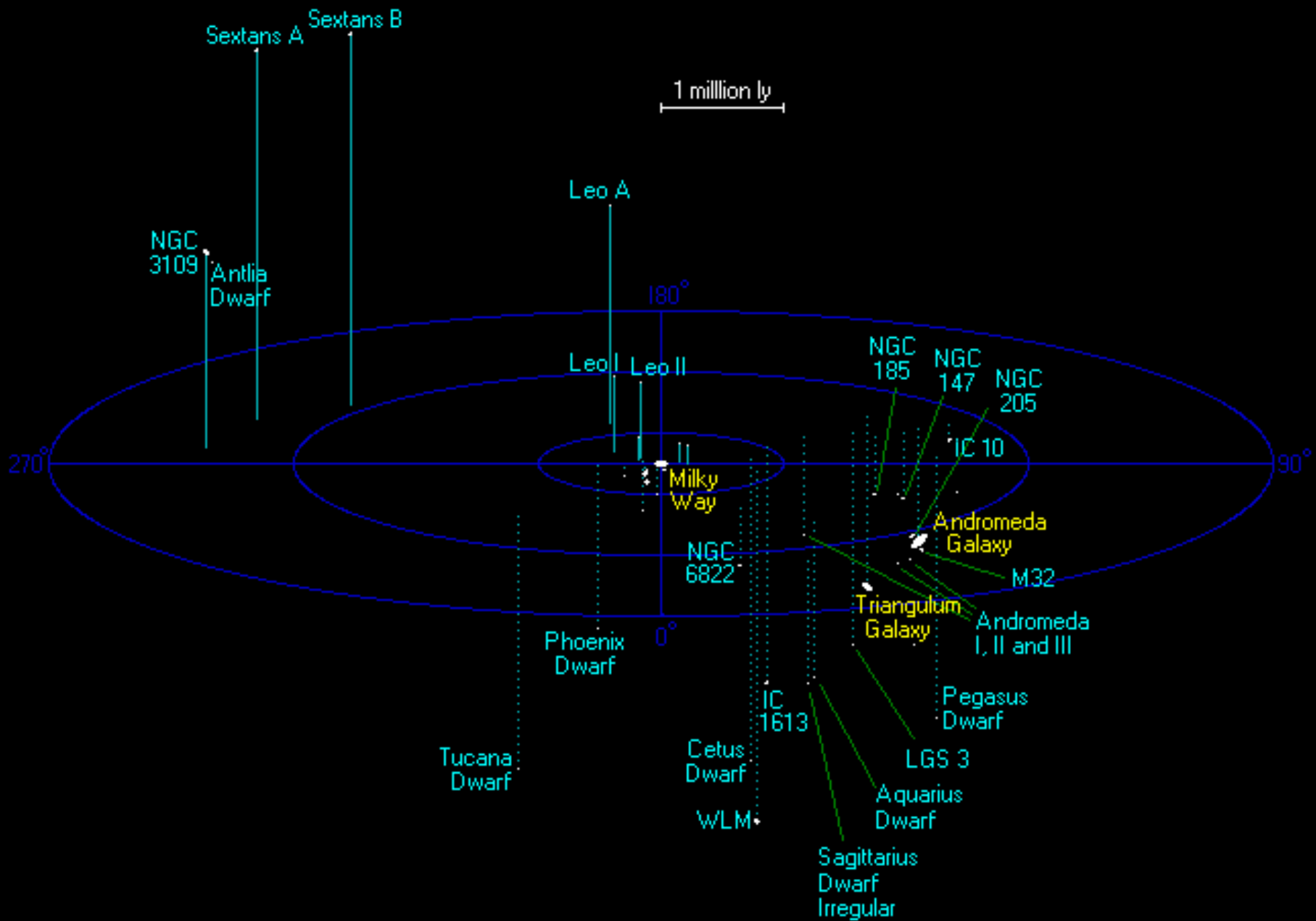


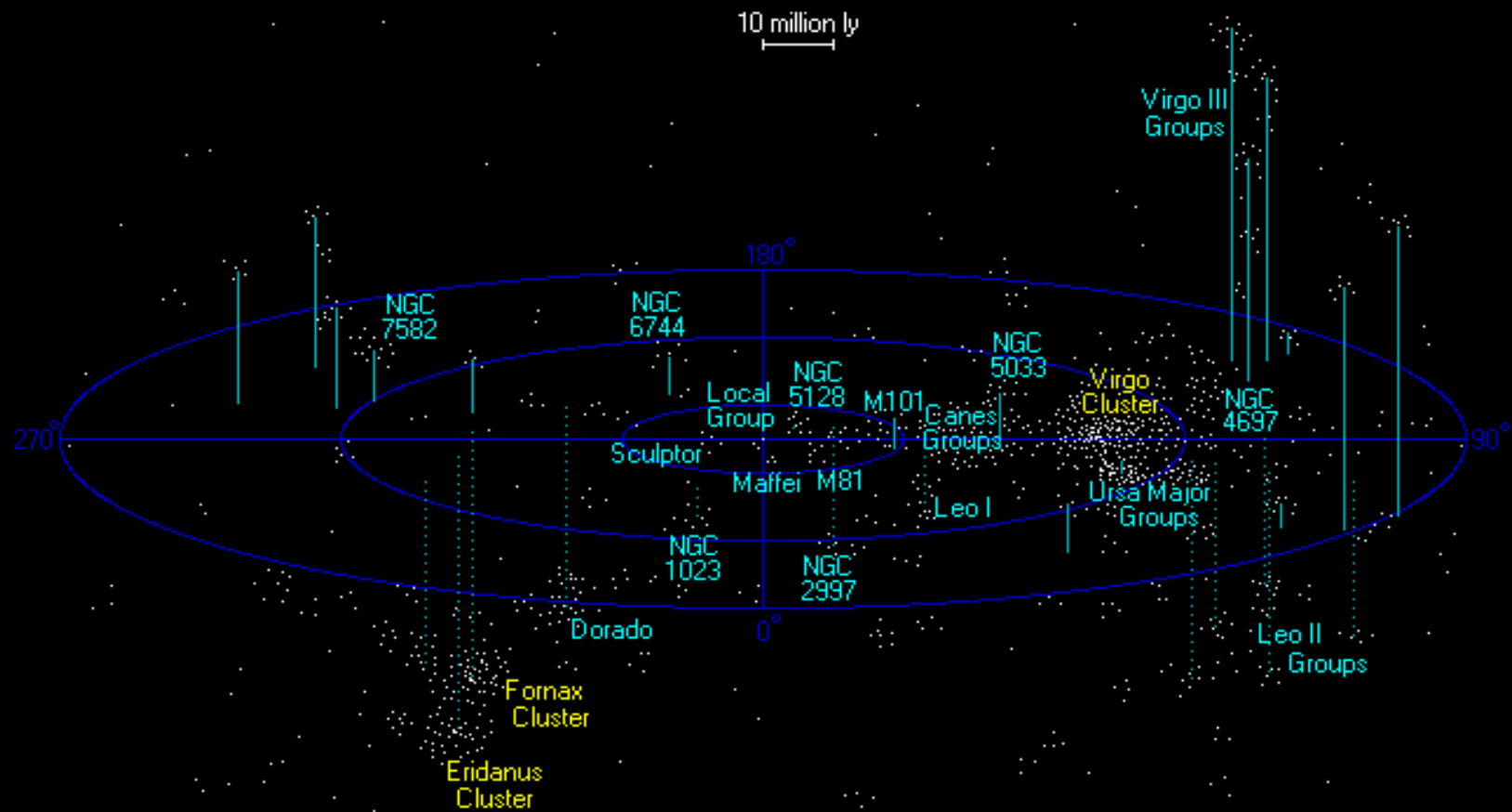




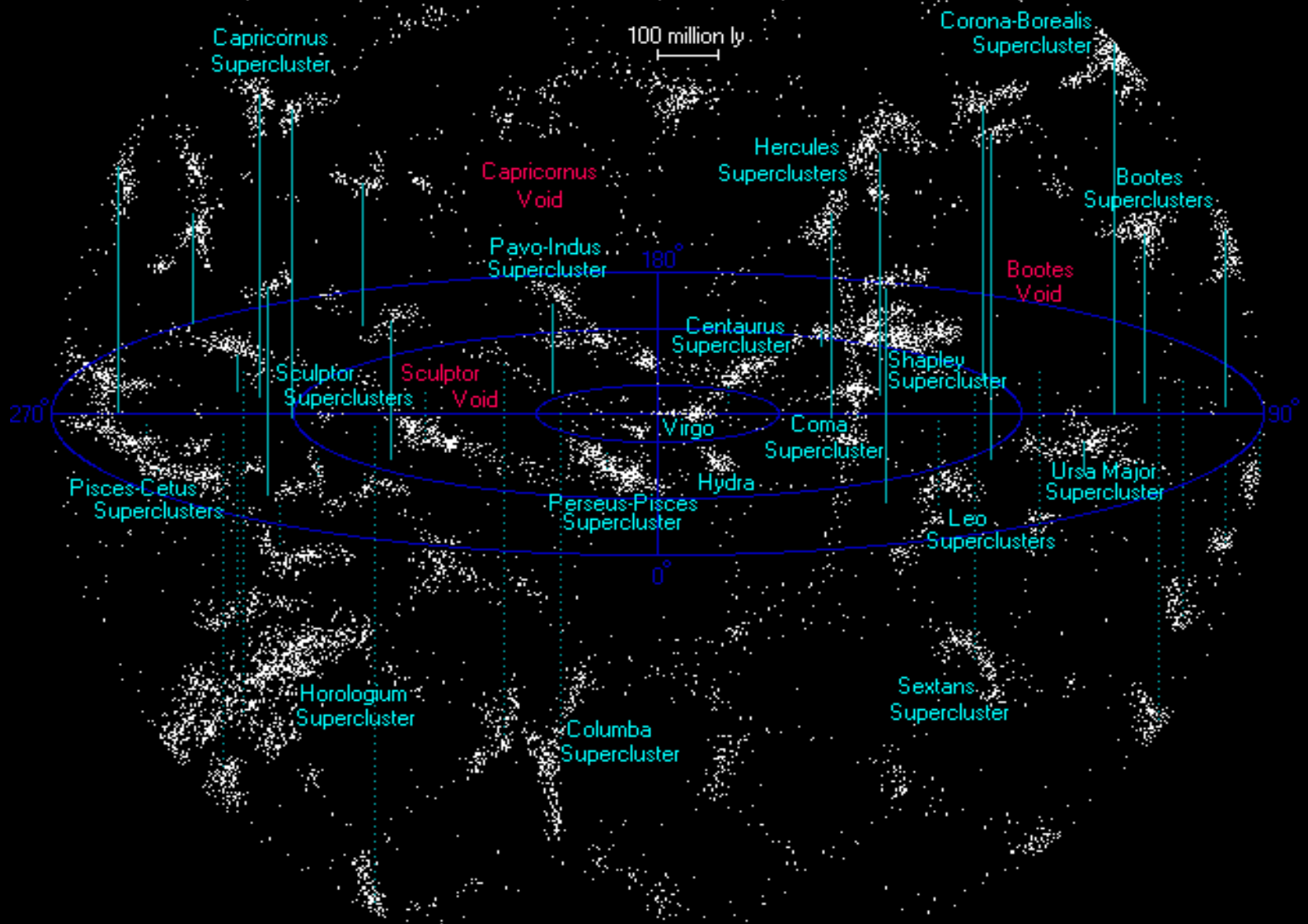
r powell

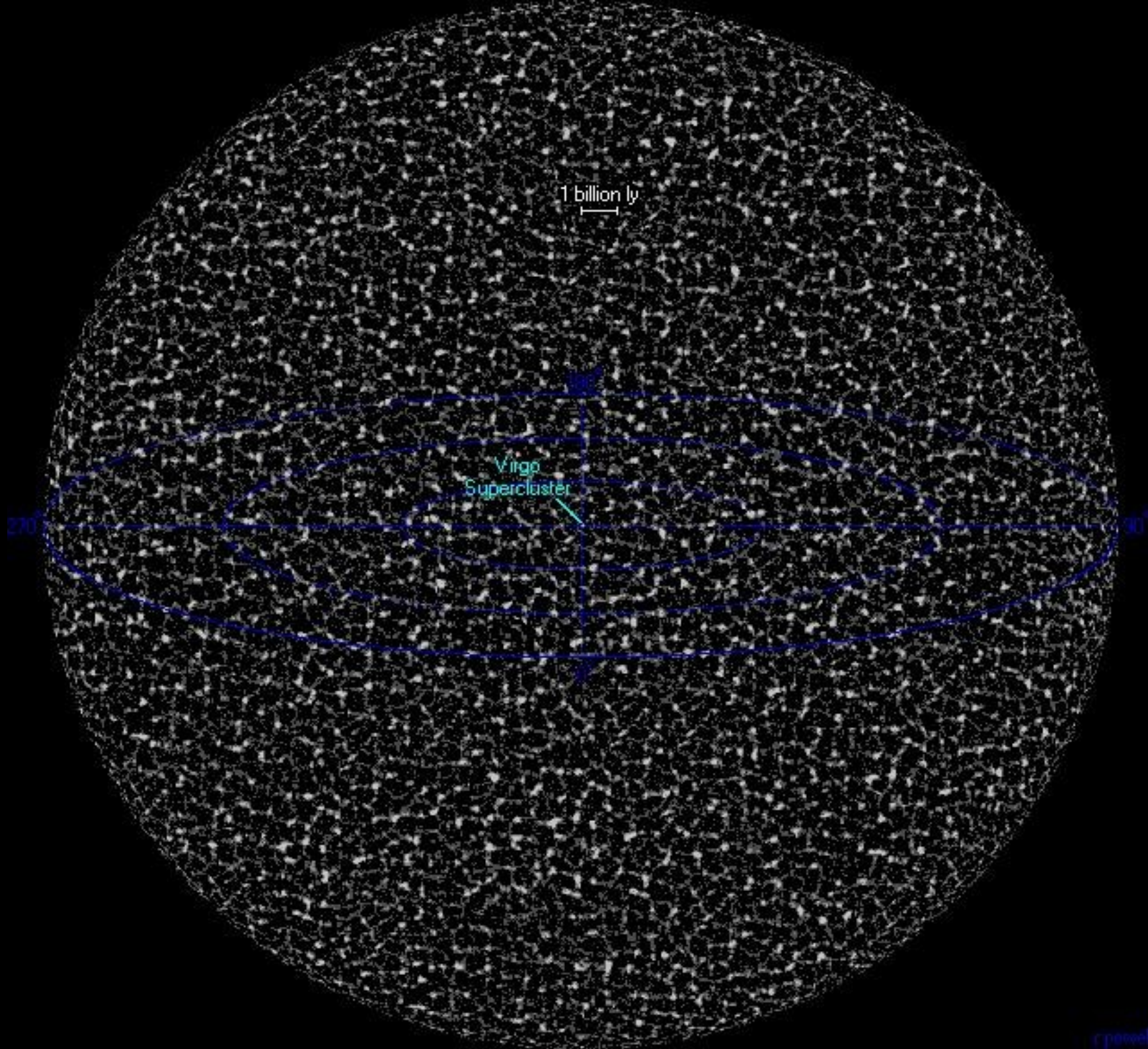






r powell





1 billion ly

Virgo
Supercluster

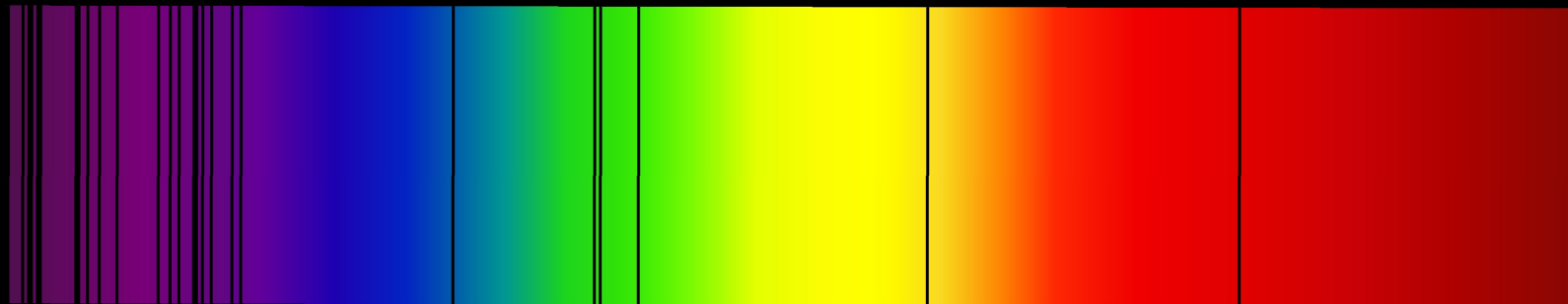
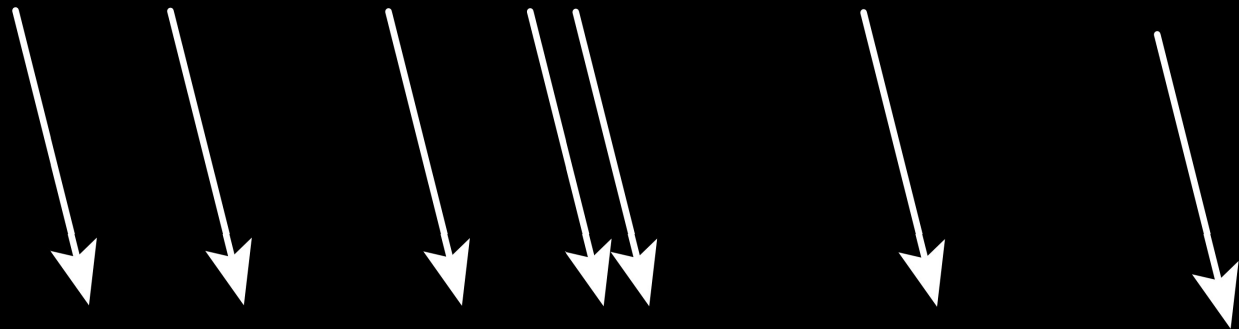
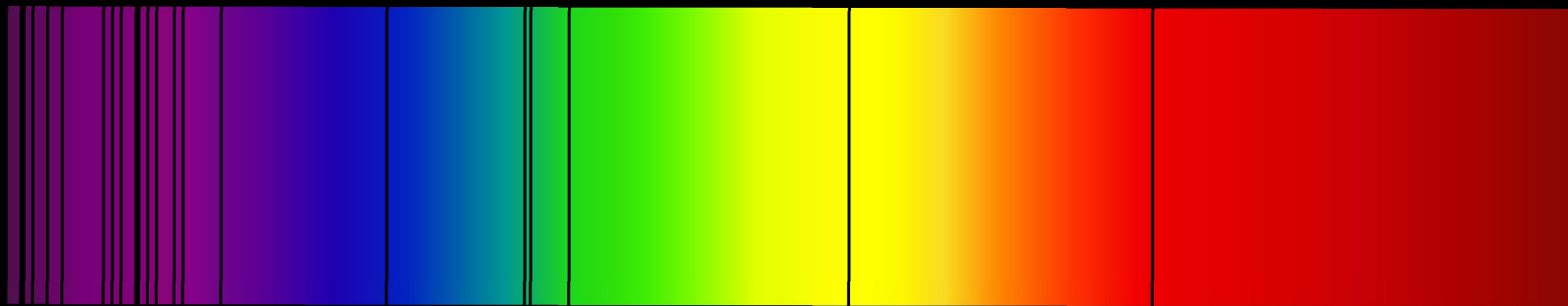
Princípio Cosmológico:

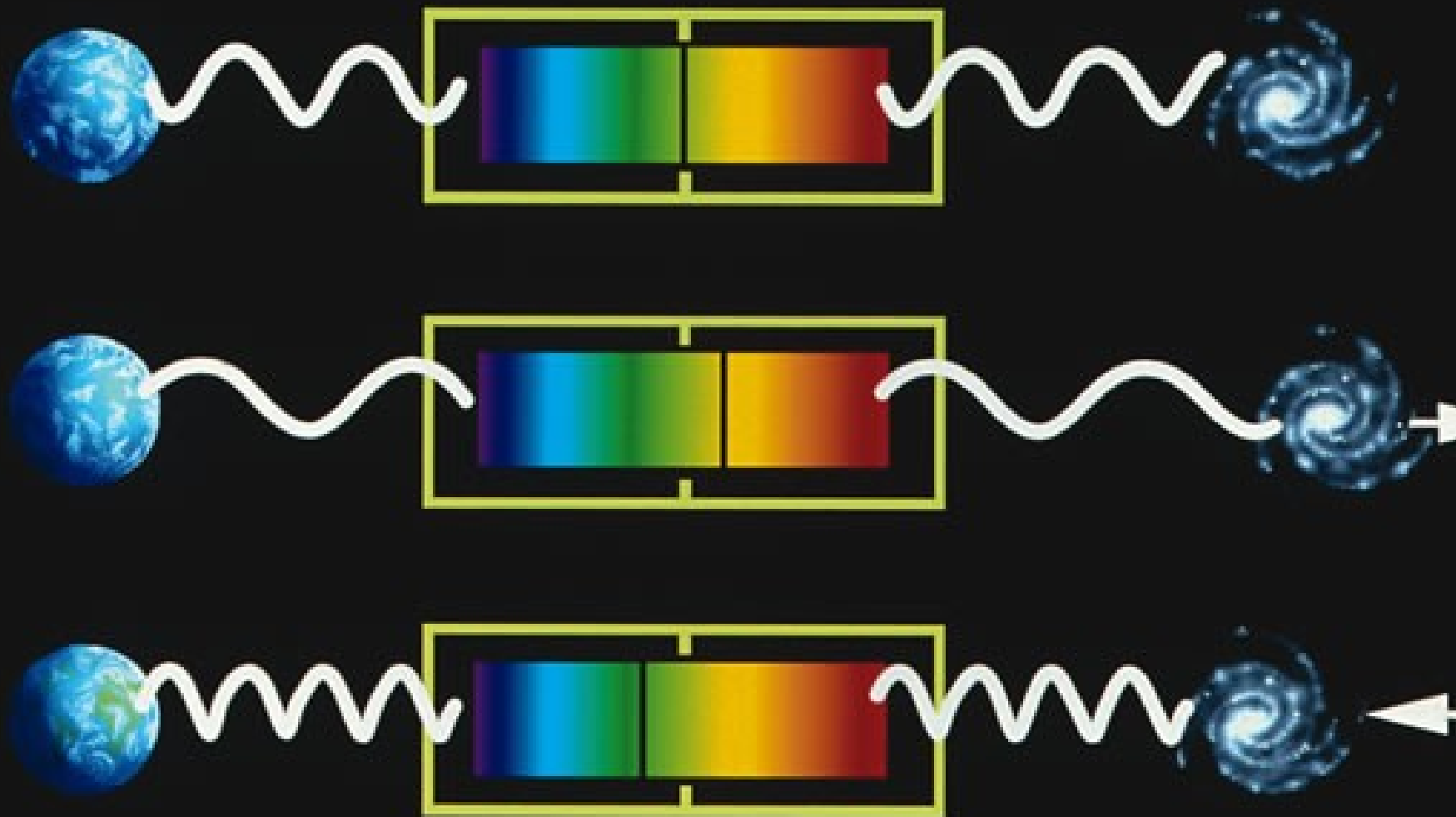
O Universo é homogêneo e isotrópico, isso significa que em grandes escalas, ou seja, o Universo é o mesmo em todos os lugares e parece ser o mesmo em todos os lugares, não há local nem direção preferenciais.

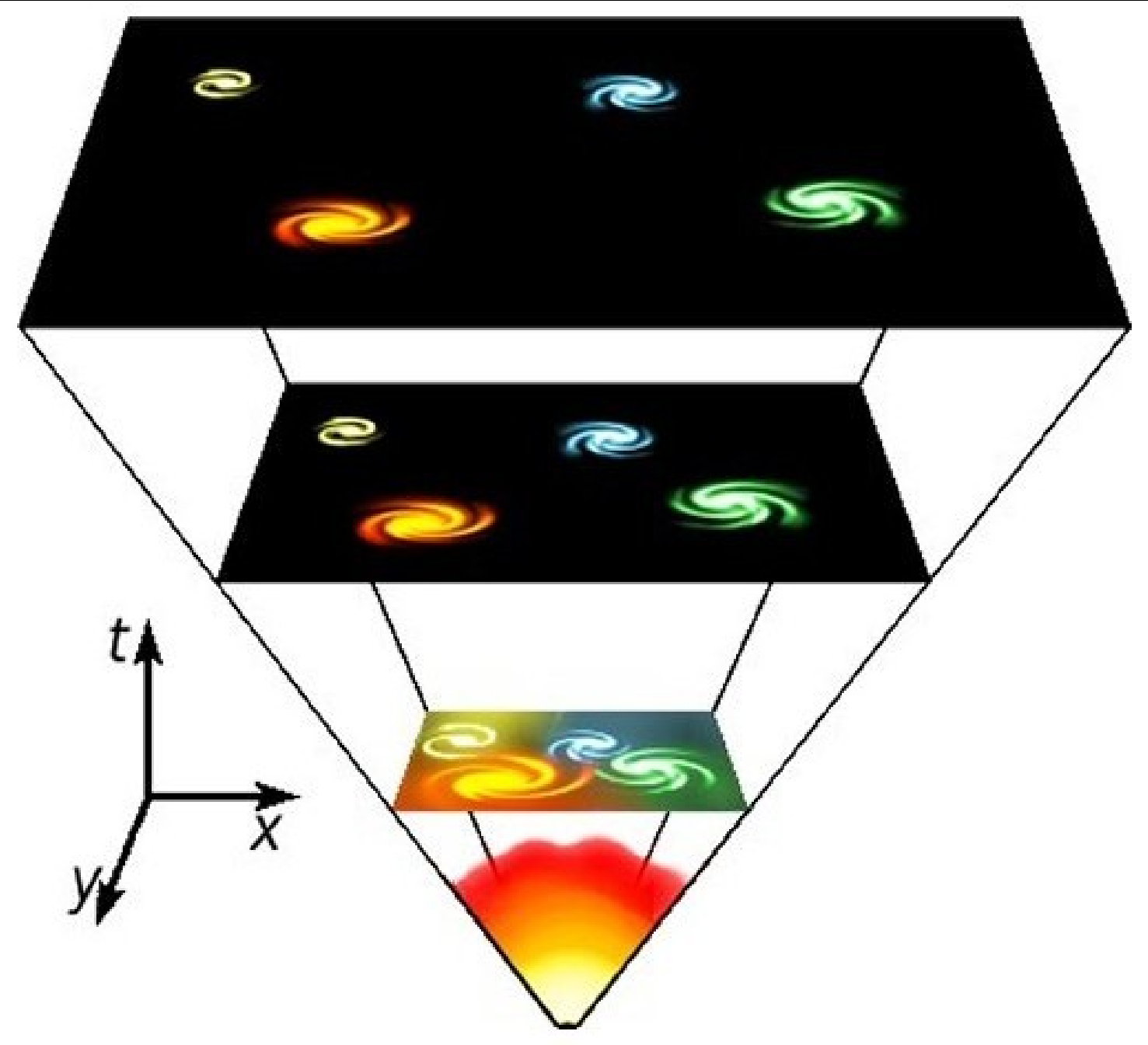
***Universo
Estático***

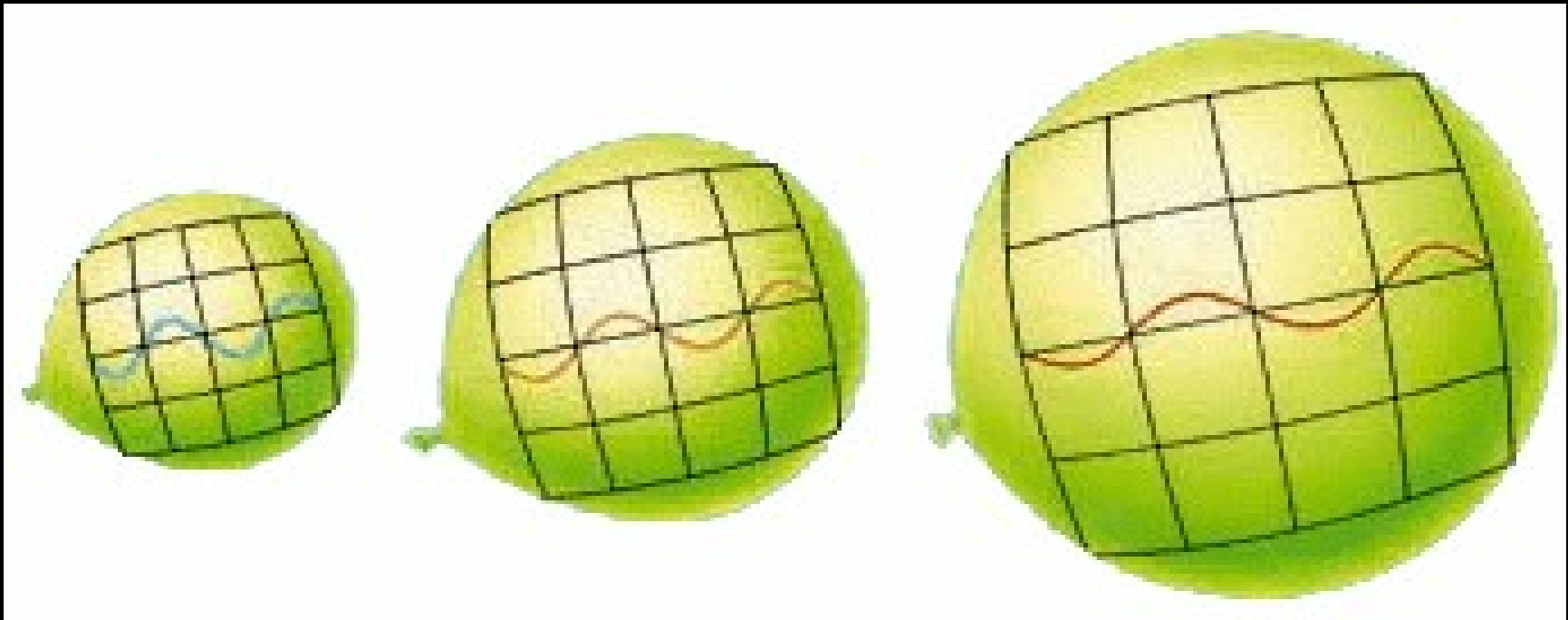


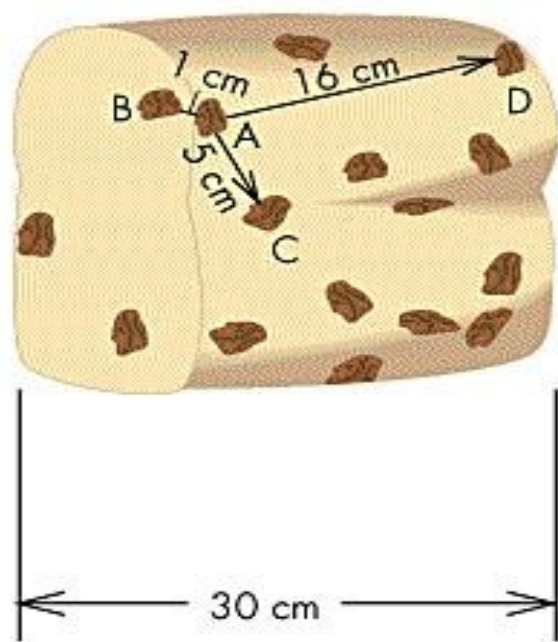
Vesto Slipher



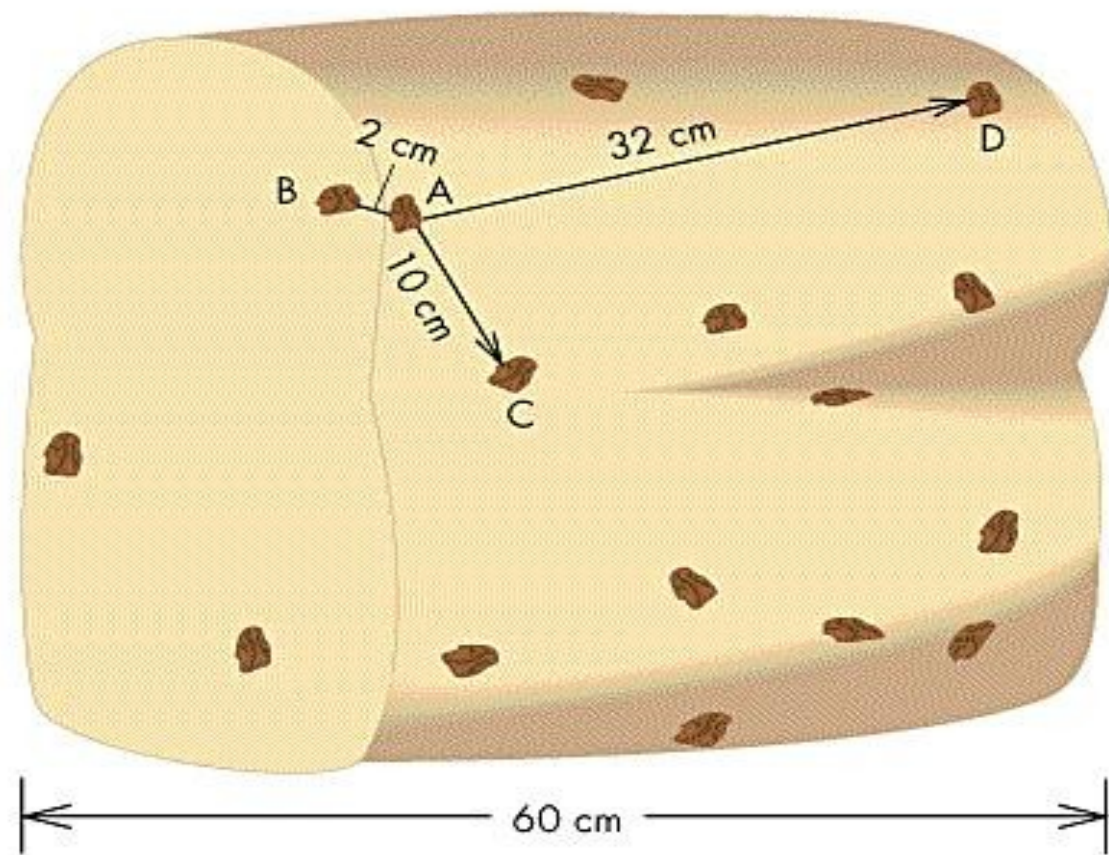






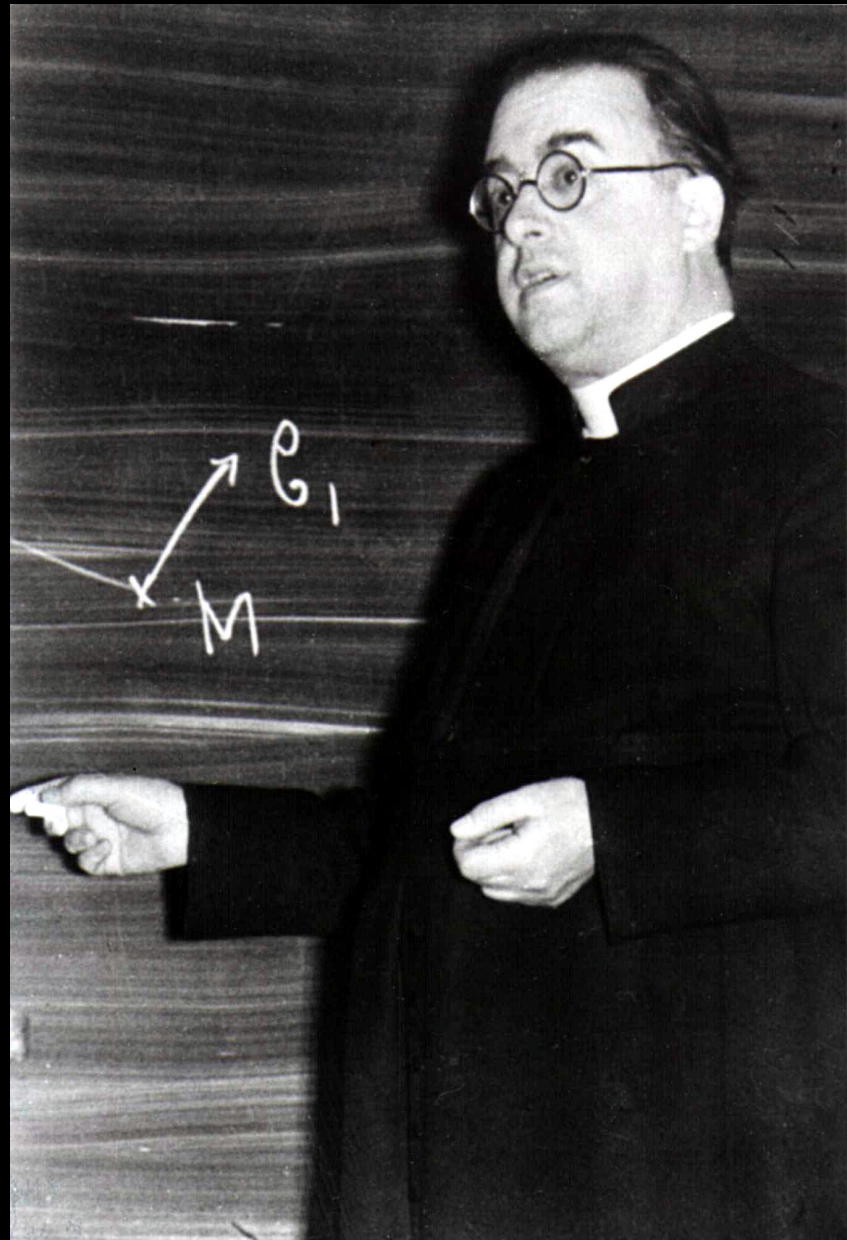


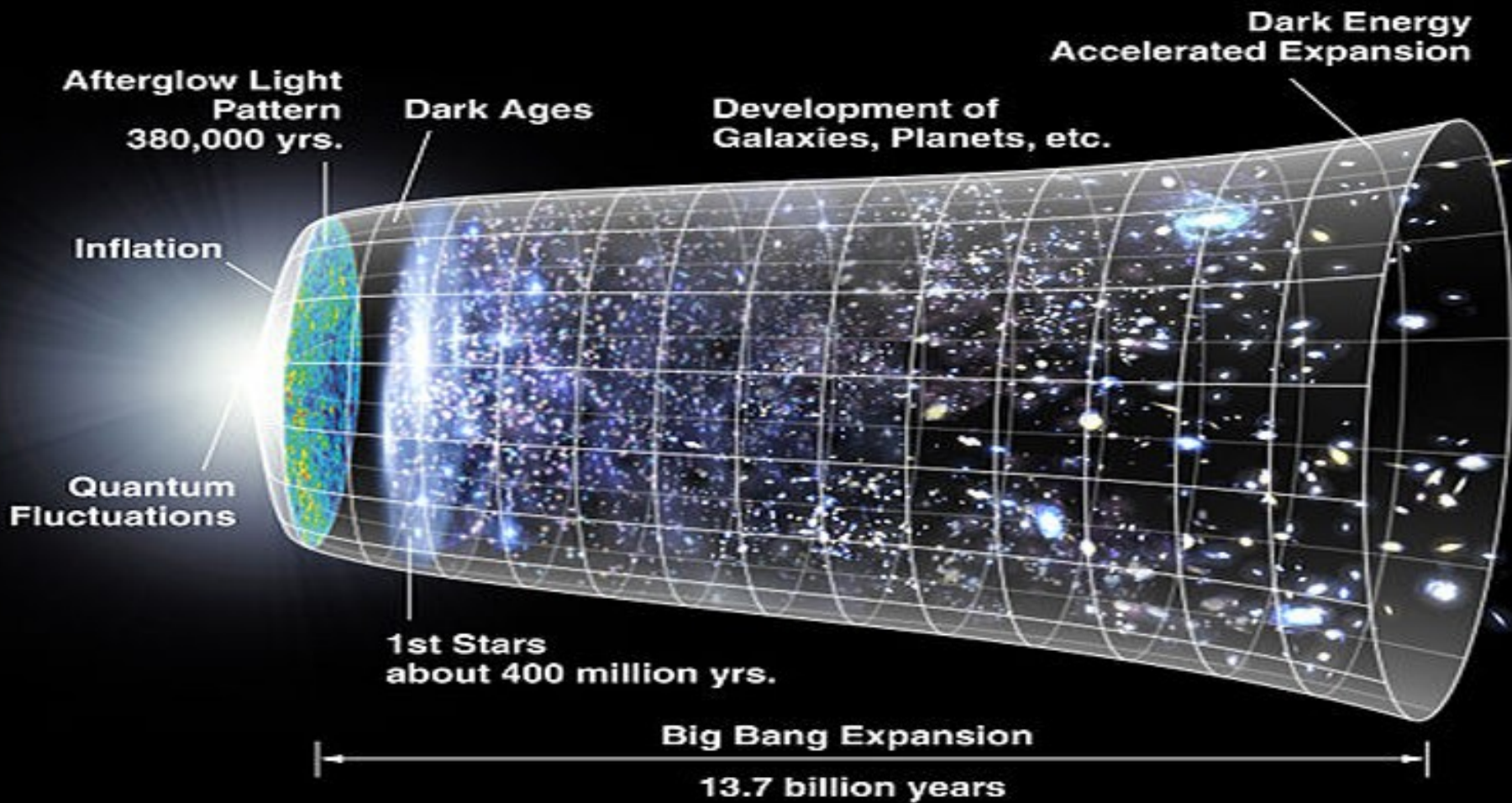
A Raisin bread dough before rising

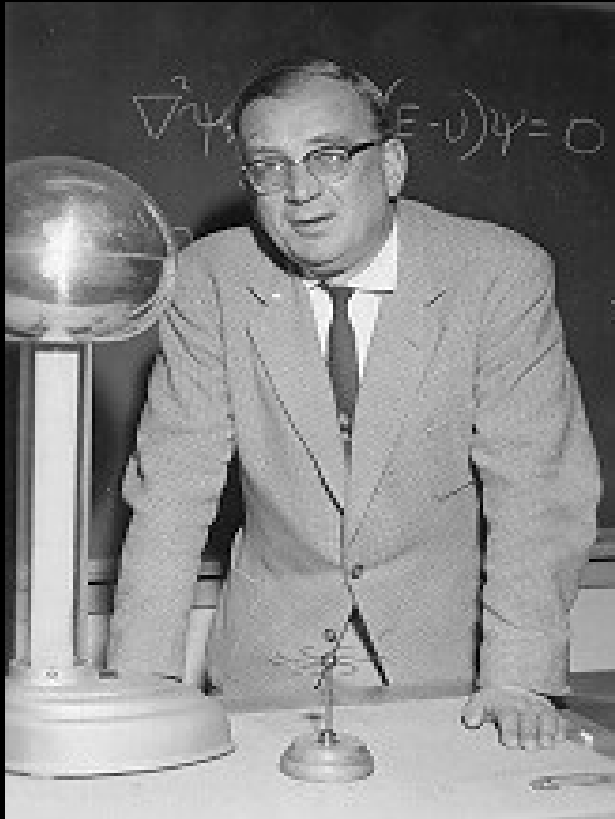


B Raisin bread dough after rising

George Lemaître







Robert Gamov



Ralph Alpher



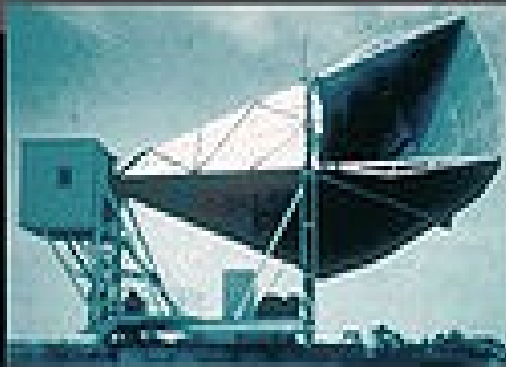
Robert Herman

Robert Wilson e Arno Penzias





1965



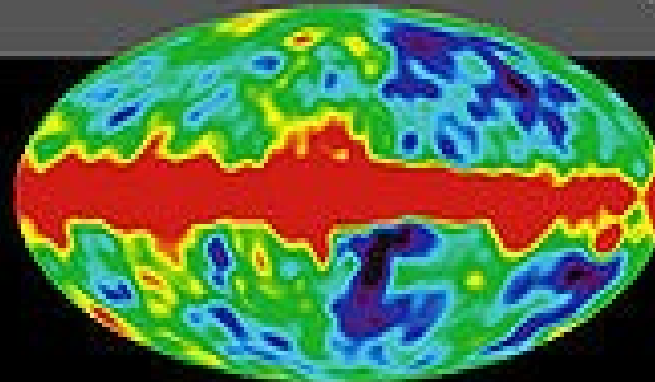
Penzias and
Wilson



1992



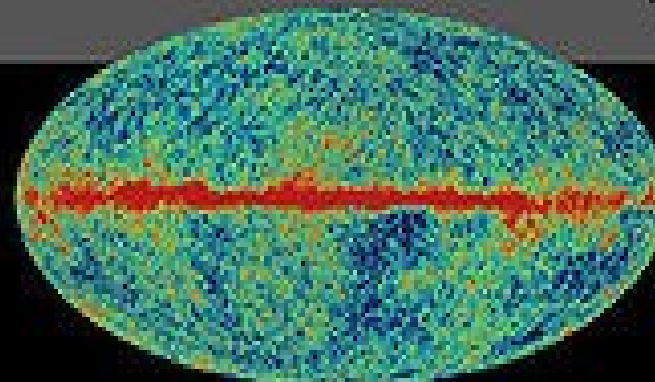
COBE

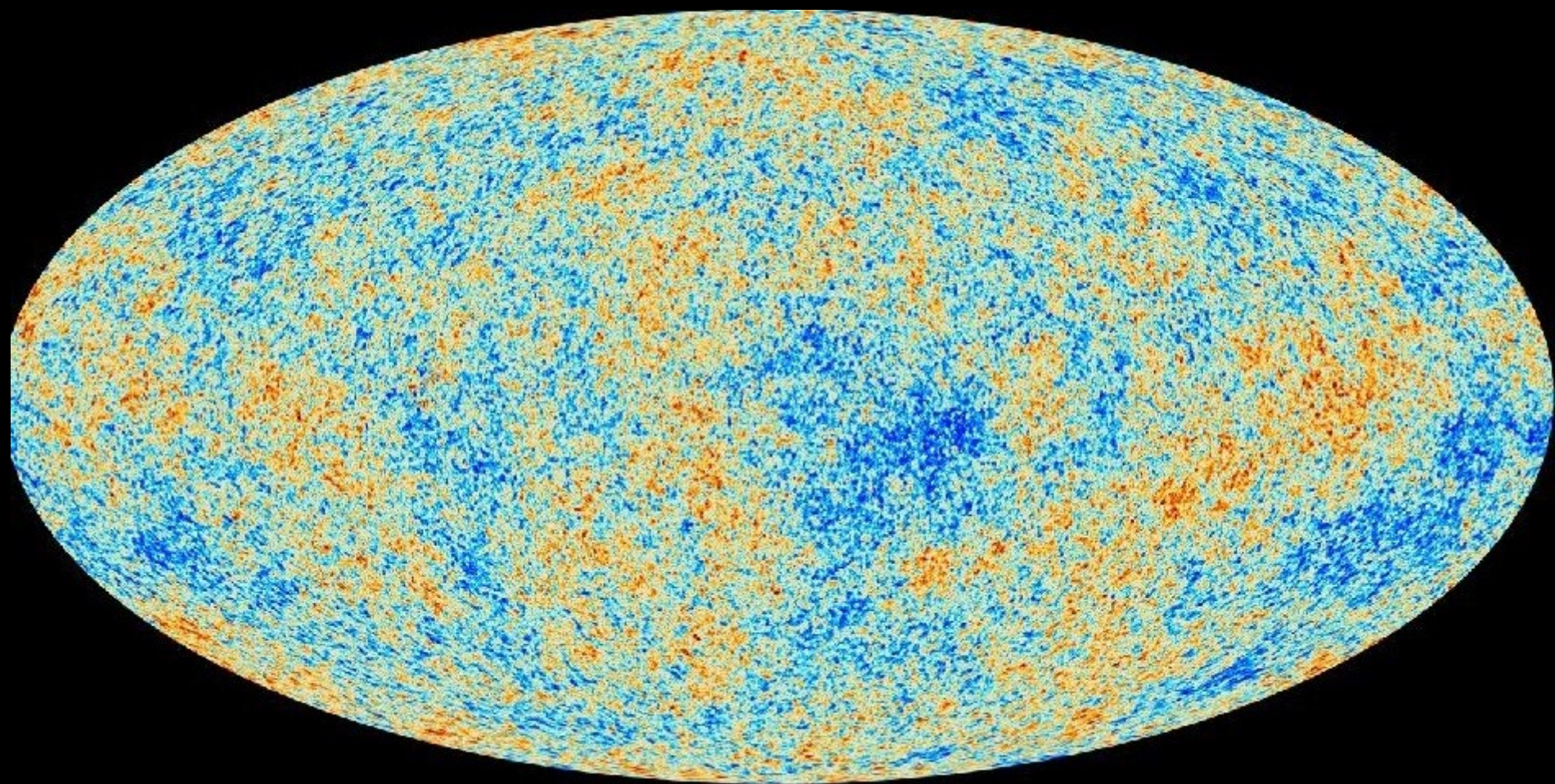


2003



WMAP

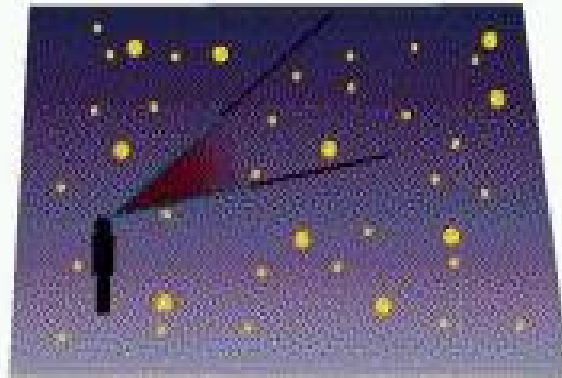




Formato do Universo



**Positively
curved
universe**



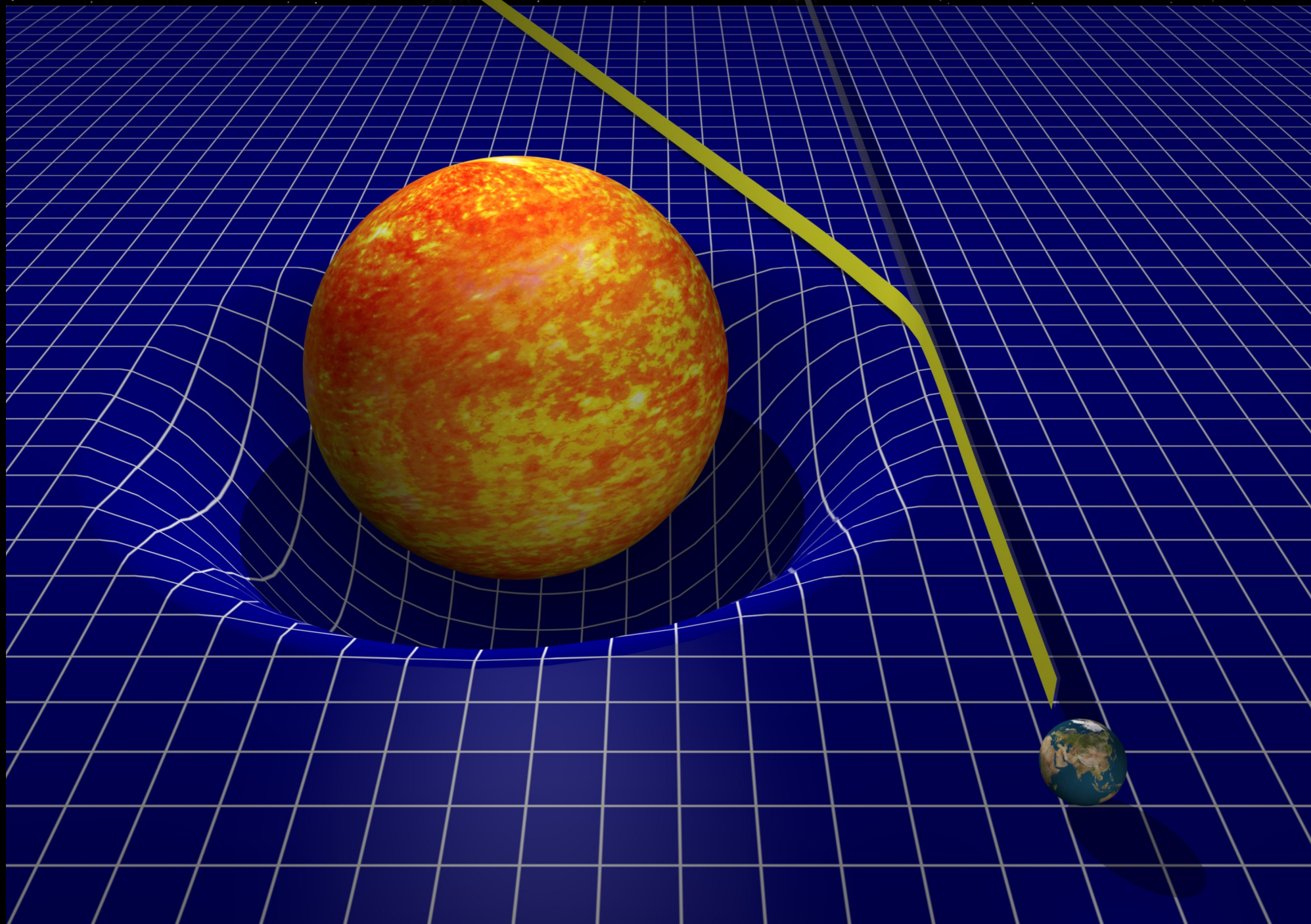
**Flat
universe**



**Negatively
curved
universe**

Real

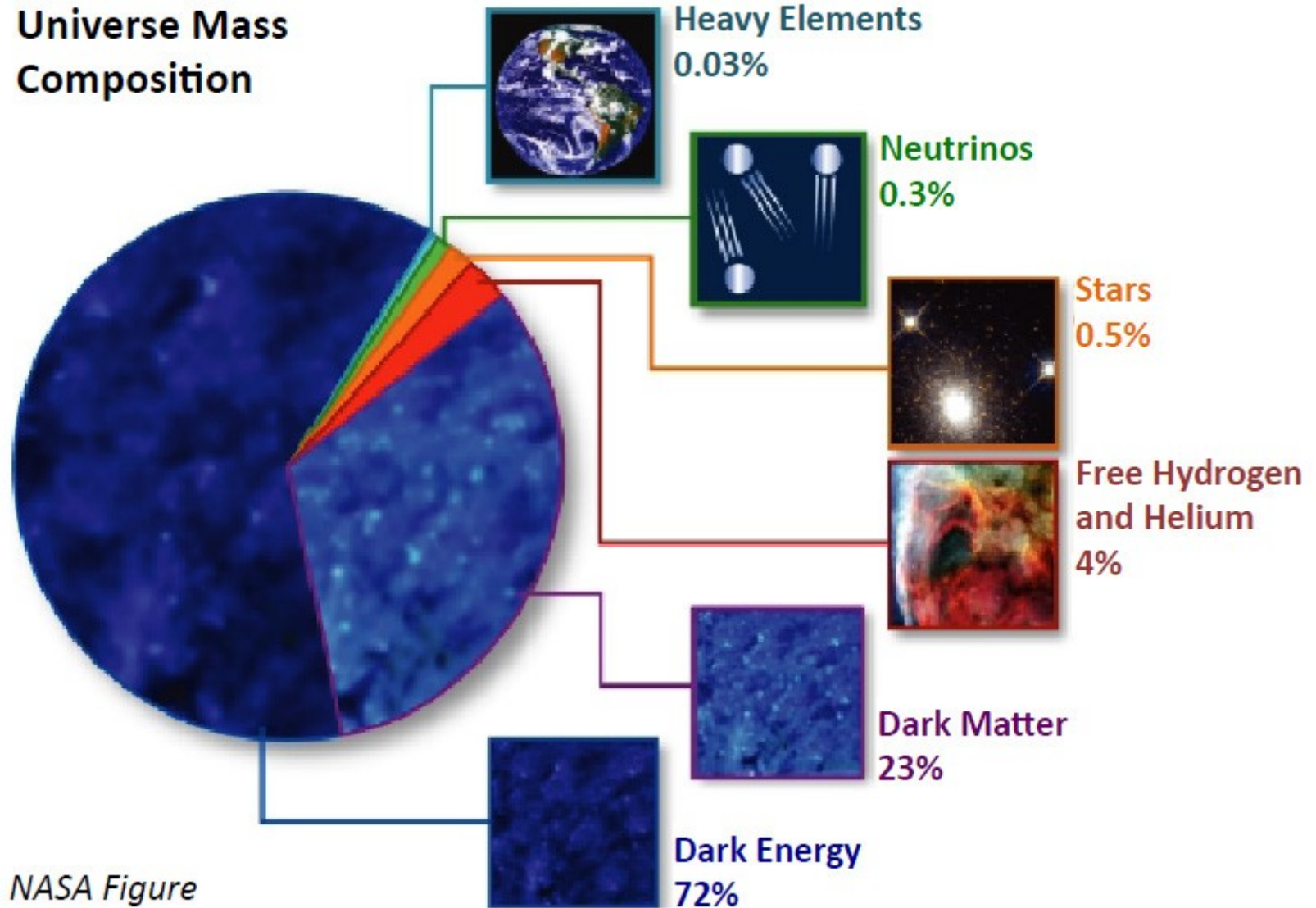
Observed





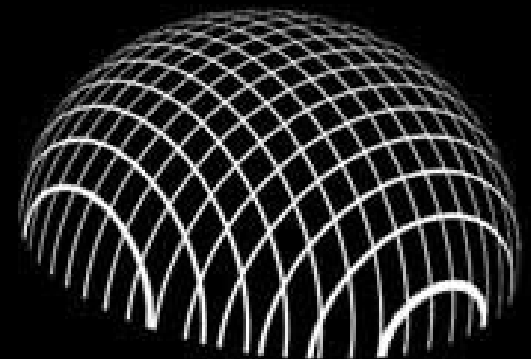
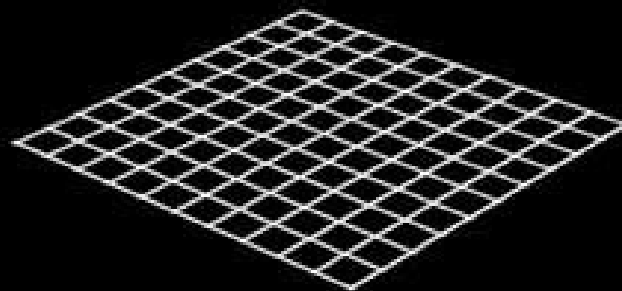
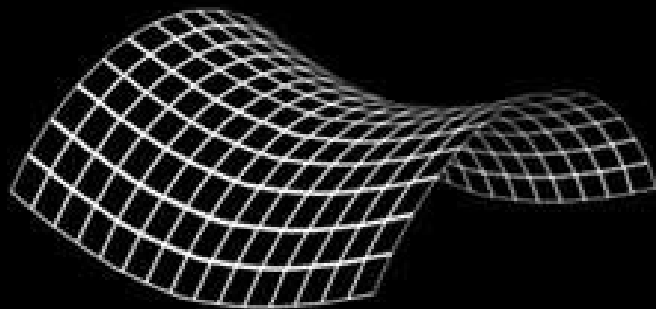
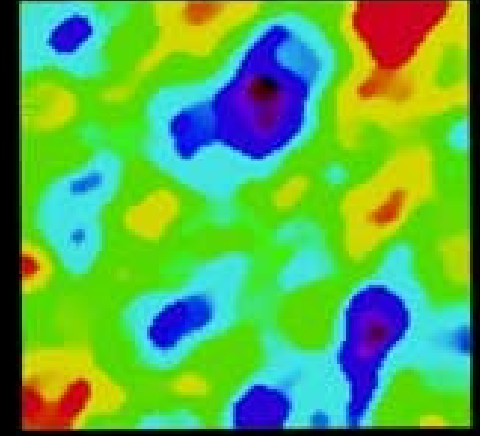
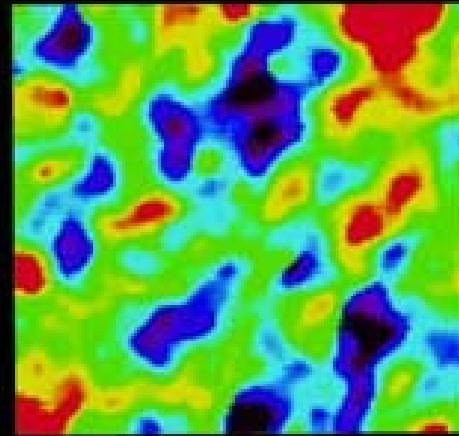
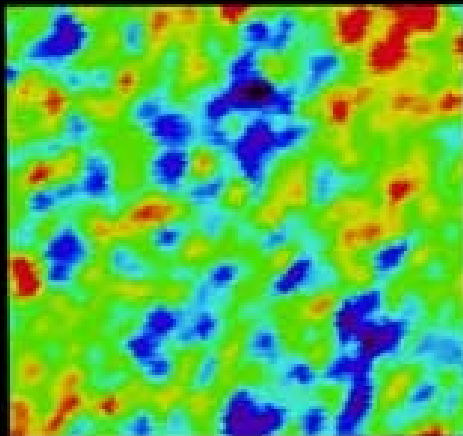


Universe Mass Composition



NASA Figure

GEOMETRY OF THE UNIVERSE

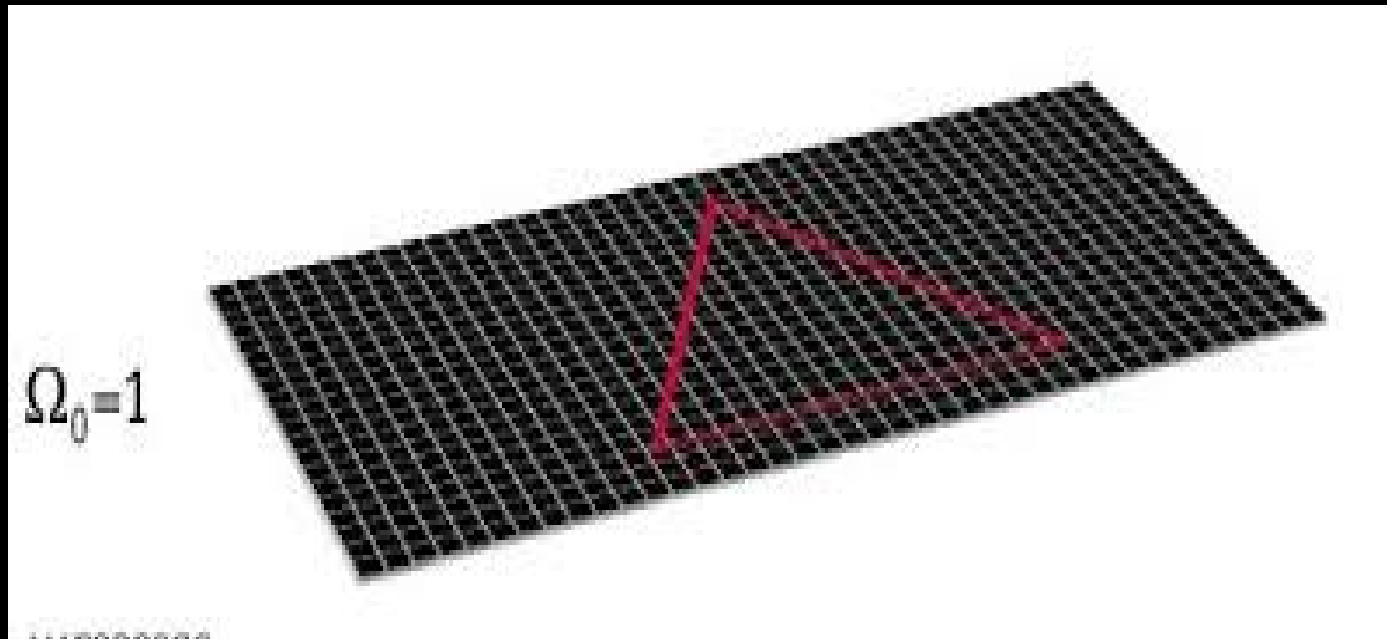


OPEN

FLAT

CLOSED

Universo é plano com precisão de 0,04% para as medidas atuais



Com um formato de Universo estabelecido e sabendo a taxa de expansão, é possível estimar o quanto ele aumentou desde que a última luz emitida que chegou aos nossos ossos olhos (ou detectores).

Cerca de 92 bilhões de anos luz

The Estimated Size of the Universe



A vast field of galaxies, likely from a deep space survey, showing a wide variety of colors (yellow, orange, red, blue, green) and shapes (spiral, elliptical, irregular). The galaxies are densely packed against a dark background. The word "Fim" is overlaid in the center in a white, italicized, sans-serif font.

Fim

Referências:

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Cosmology : The Science of the Universe – Edward Harrison

<http://www.if.ufrgs.br/~fatima/ead/universo.pdf>

<http://www.if.ufrgs.br/~fatima/ead/origem.htm>

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http://en.wikipedia.org/wiki/Shape_of_the_universe

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