

A detailed image of the cosmic web, showing a complex network of dark matter filaments and galaxy clusters. The filaments are highlighted in vibrant colors like red, orange, and yellow against a dark blue and black background, with numerous small white stars scattered throughout.

Evolución Química del Universo

Por Francisco J. Suárez Camacho

Asociación Larense de Astronomía, ALDA



Introducción





Doubt in my
head



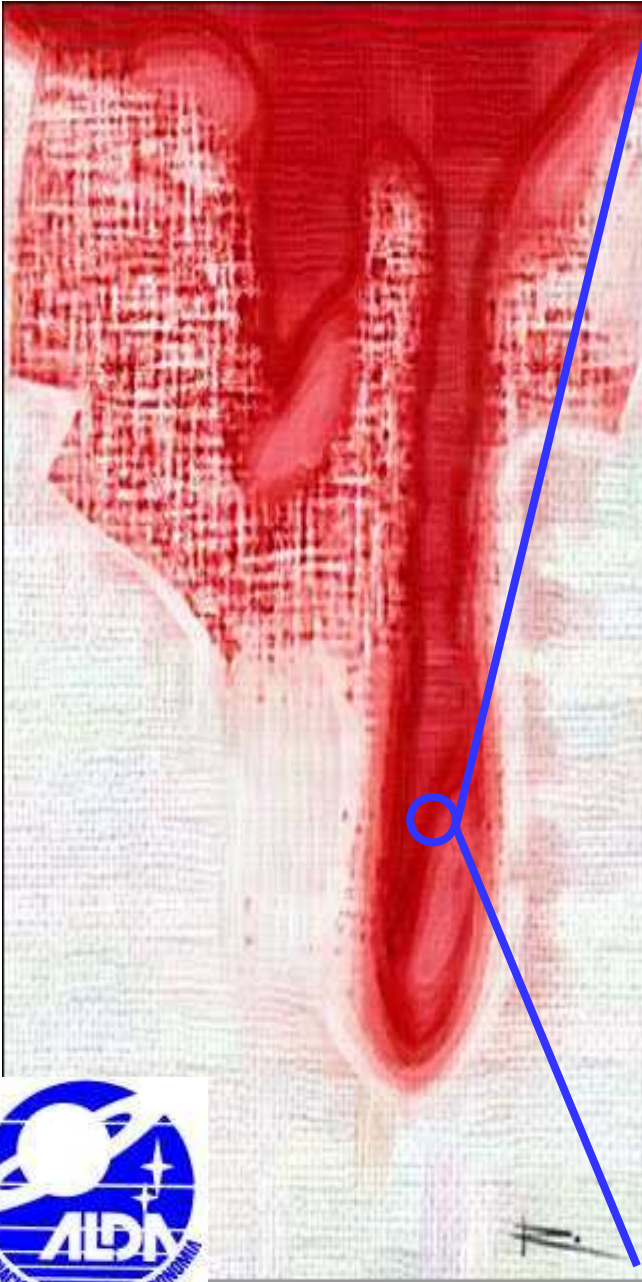


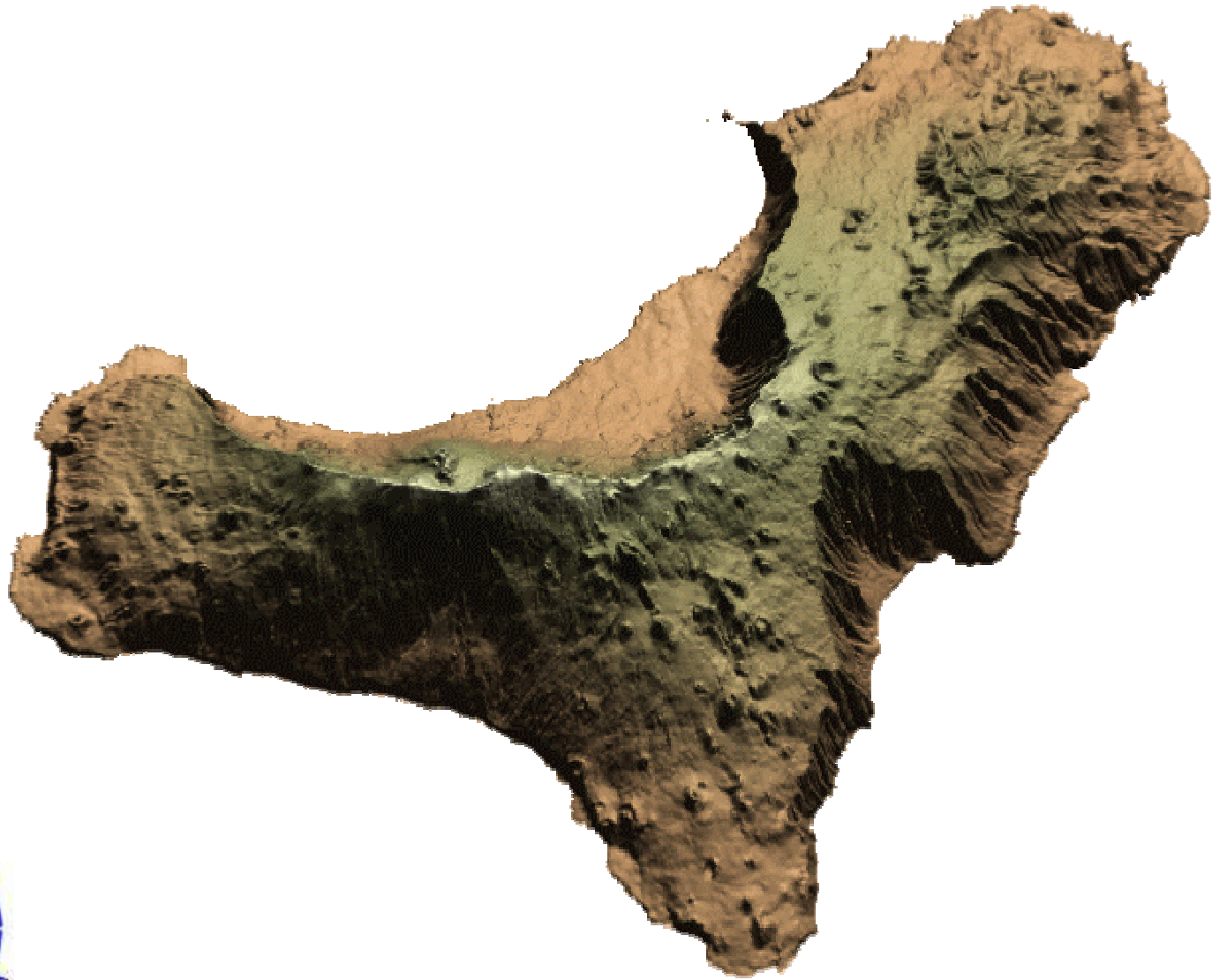
Química





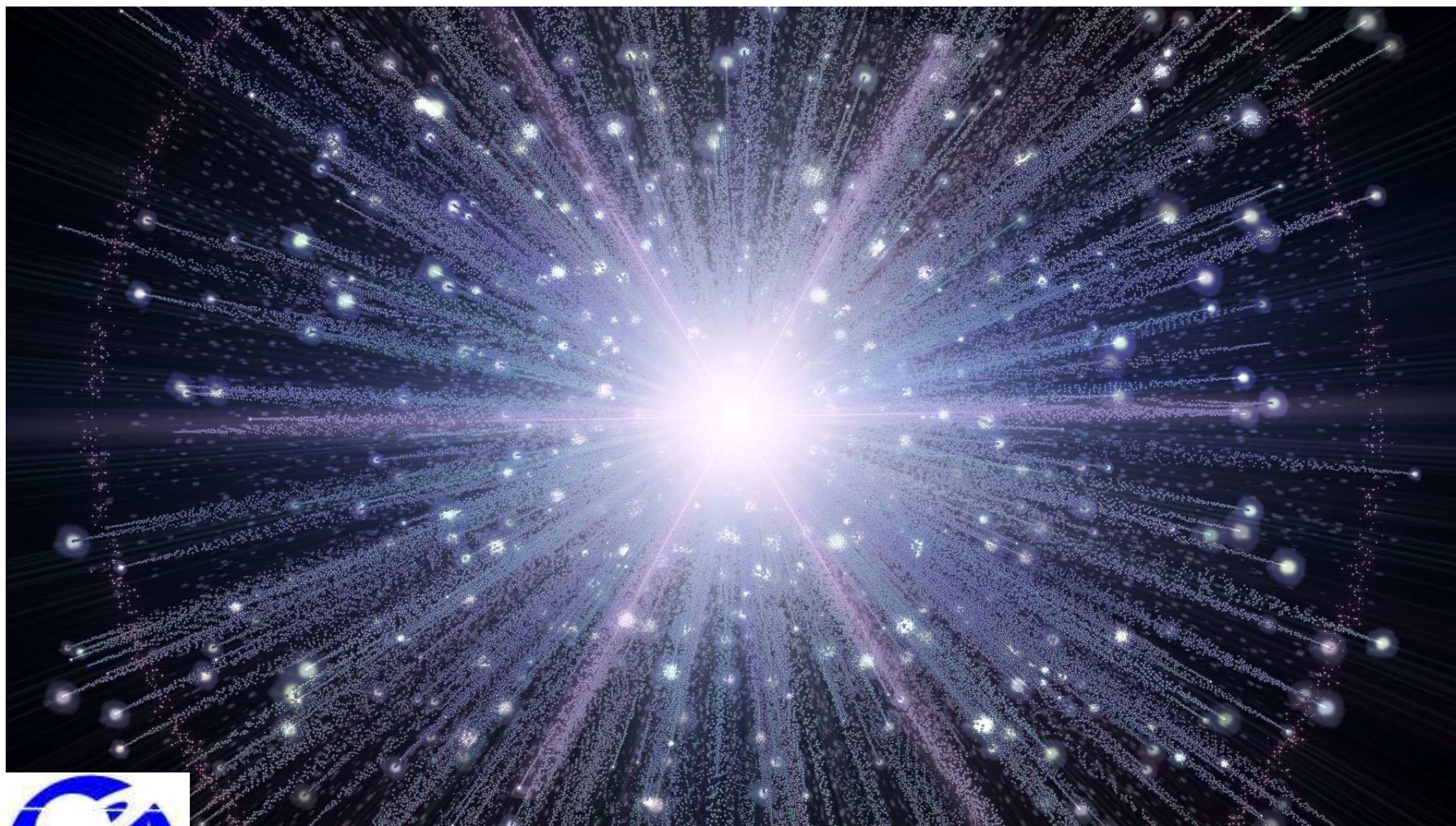






Big - Bang





- *El universo se formo hace 14.000.000.000 años.*
- *Toda la materia se concentraba en la singularidad.*
- *El Big Bang explica el universo a partir de la explosión y no antes.*



Nacen las Partículas Elementales

Tiempo

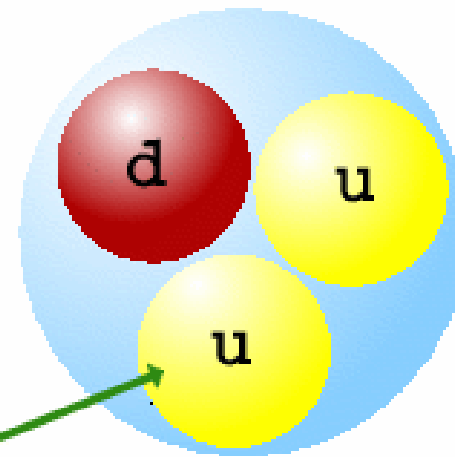
Temperatura

0.01 s

100.000 millones de grados Kelvin

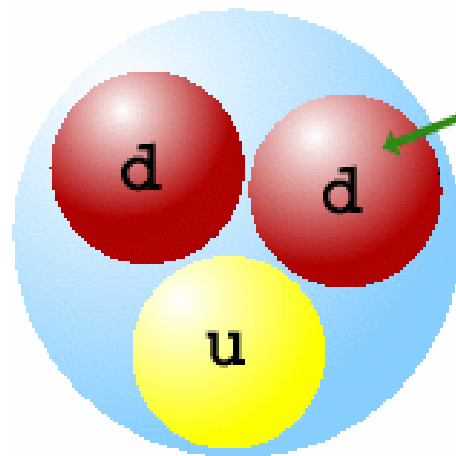


Próton
 $q = +2/3 + 2/3 - 1/3 = +1$

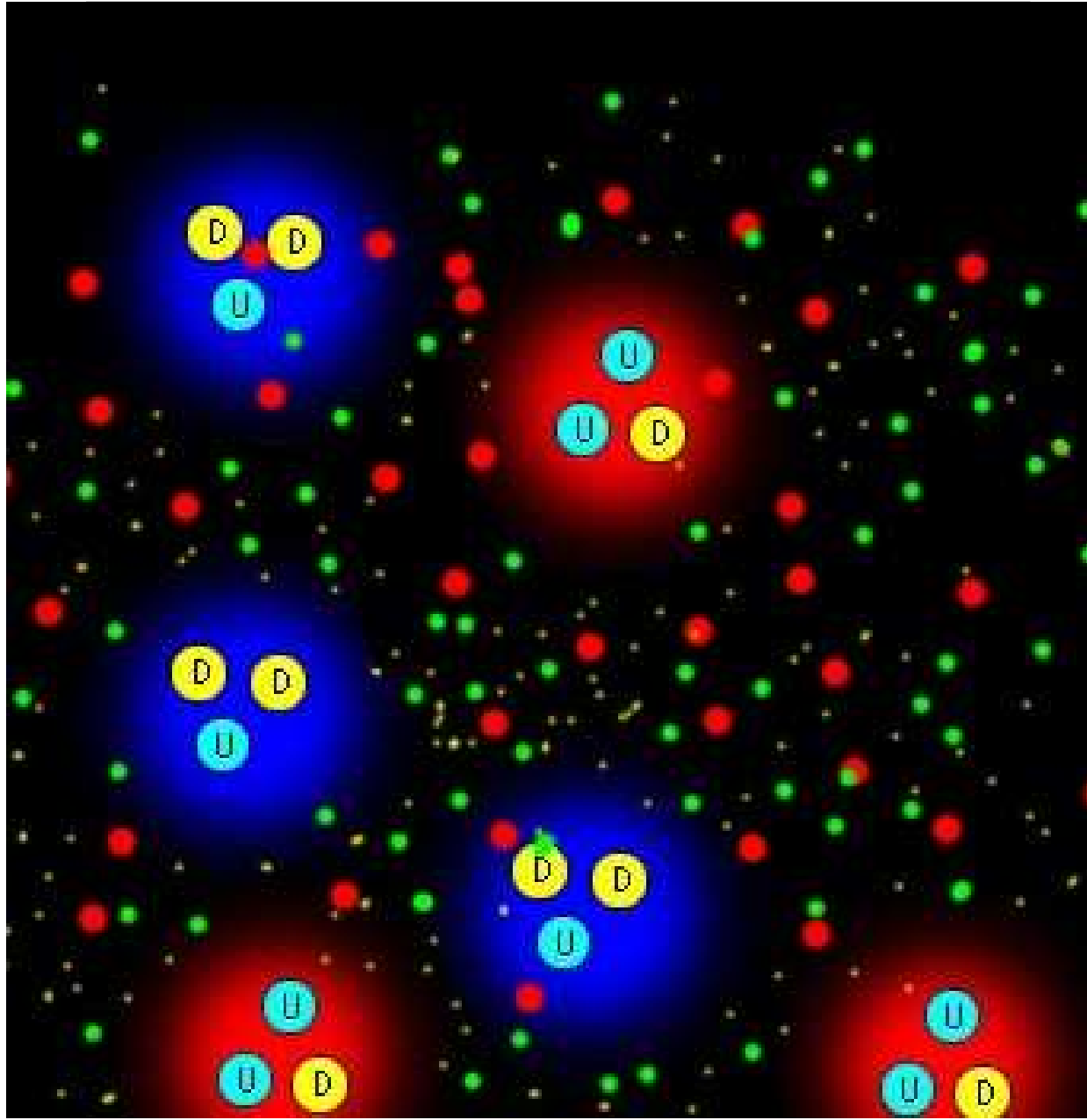


quark up
 $q = +2/3$

quark down
 $q = -1/3$



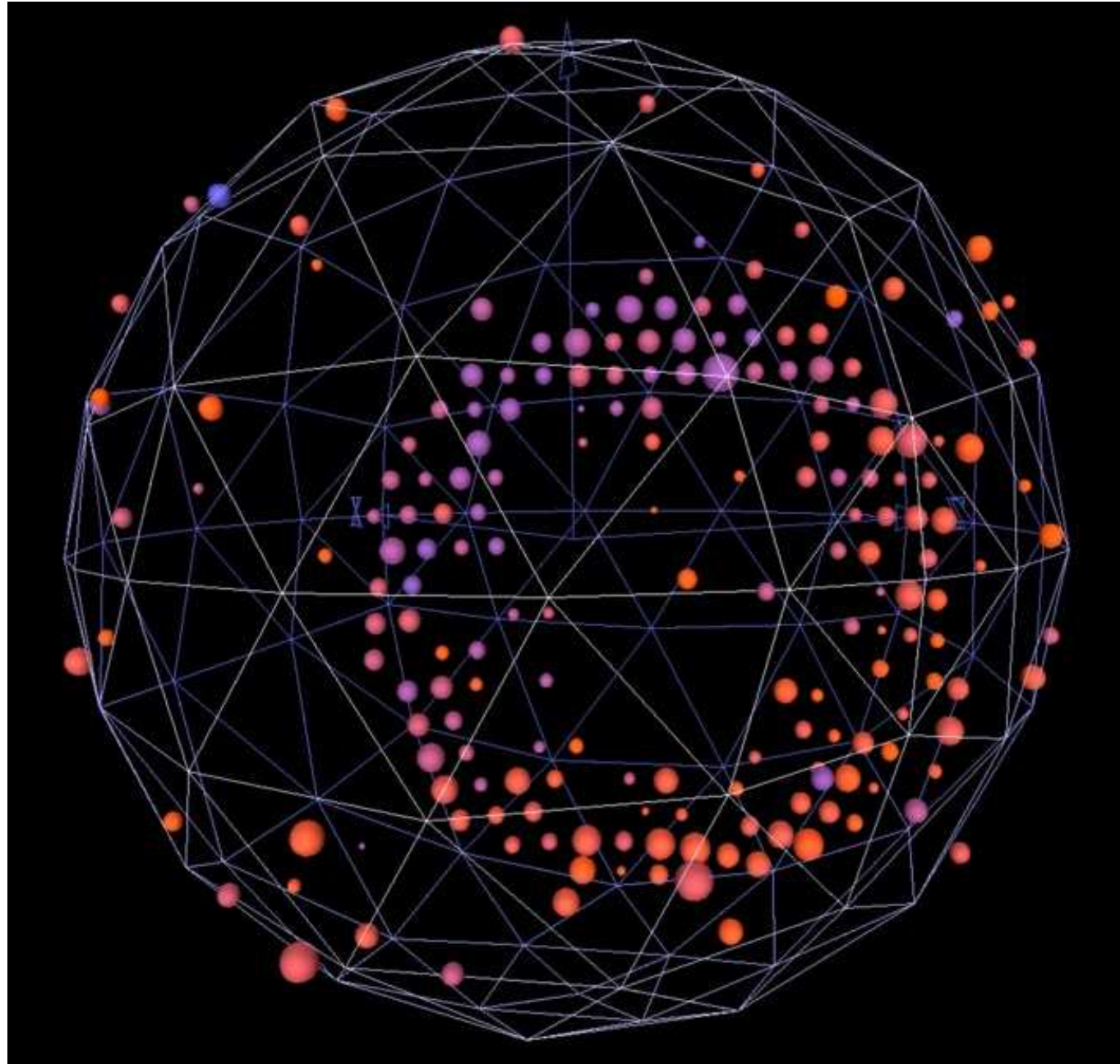
Nêutron
 $q = +2/3 - 1/3 - 1/3 = 0$

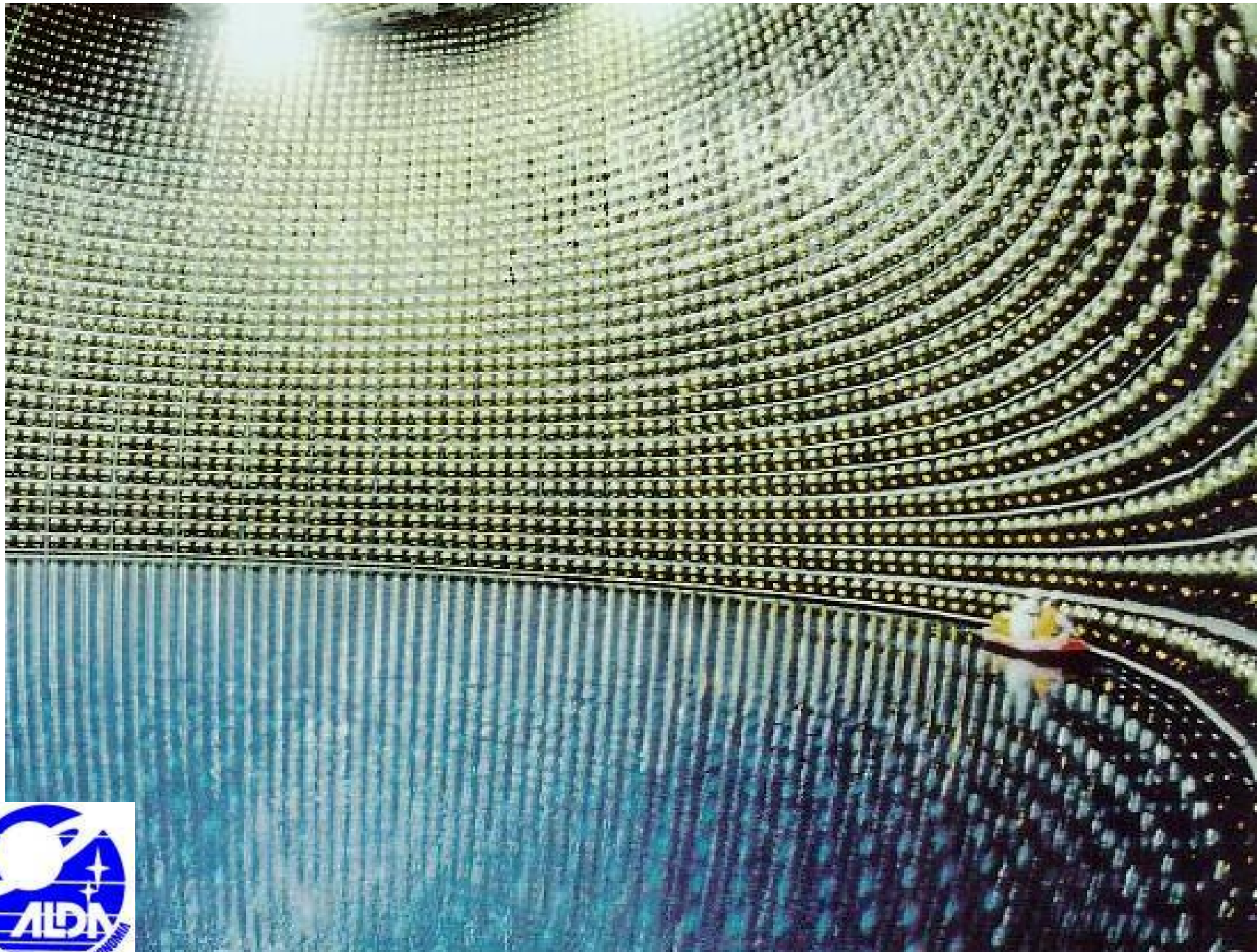


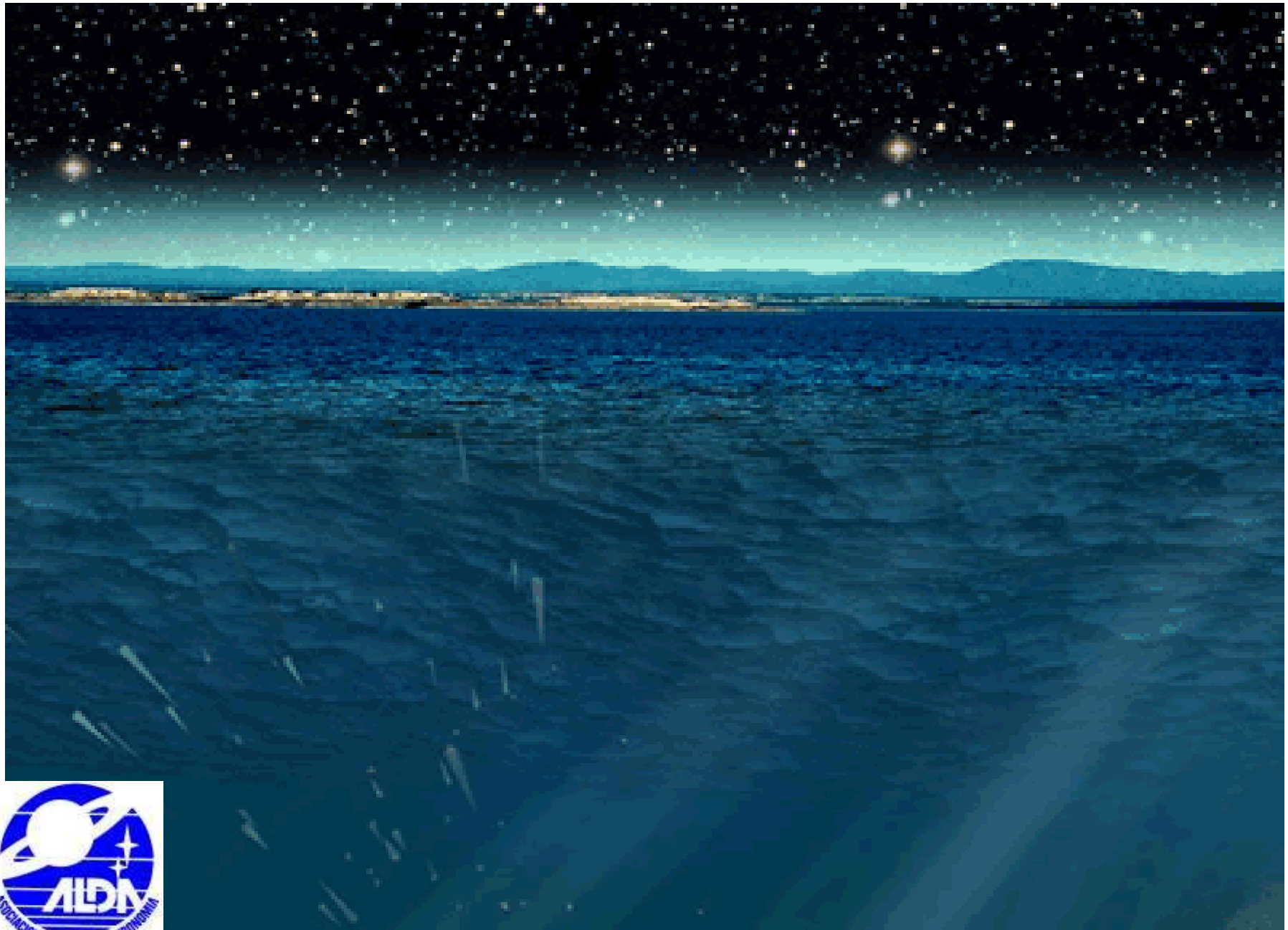
El Imperio del Neutrino

Tiempo	Temperatura
1 s	10.000 millones de grados Kelvin









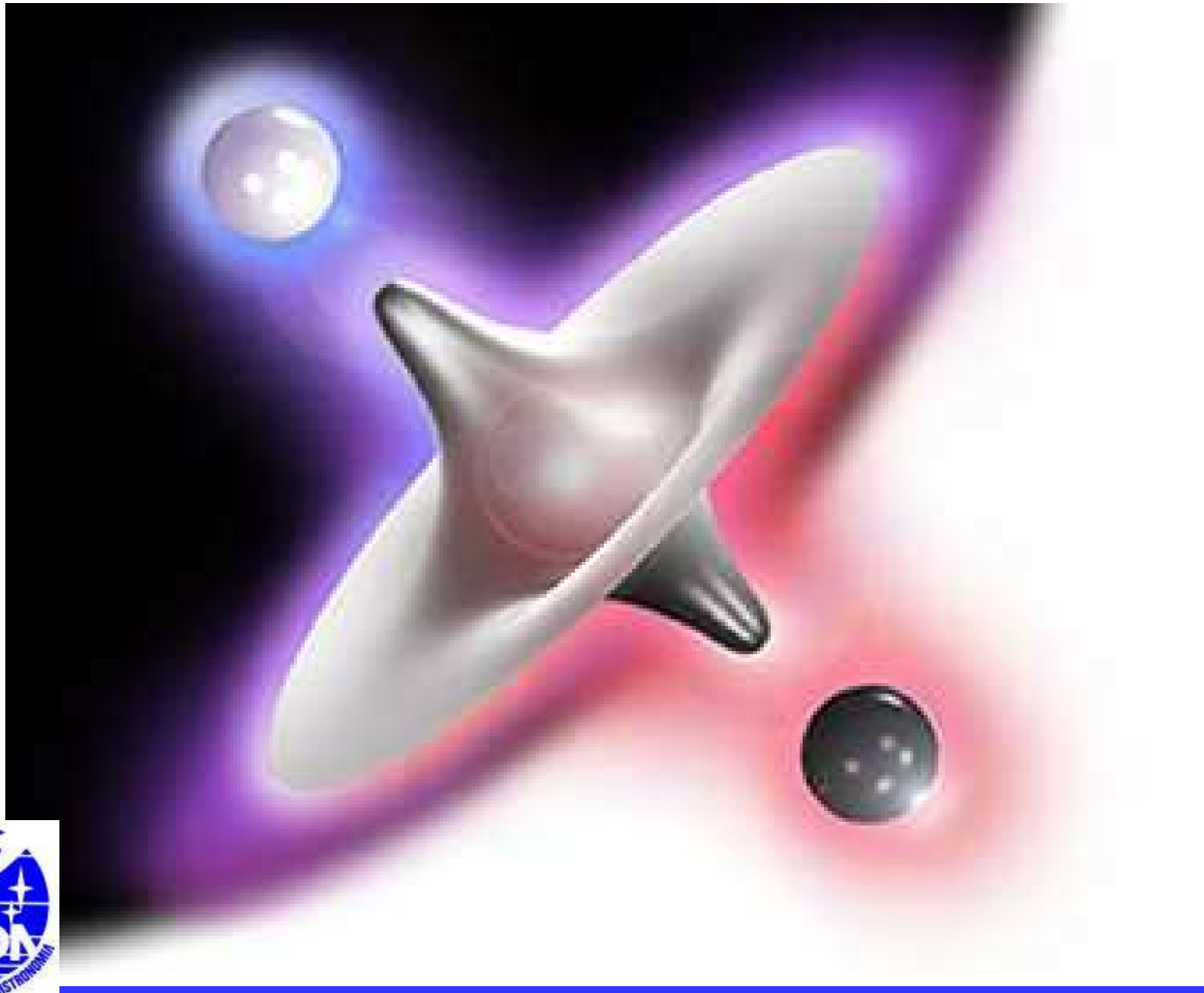
Aniquilación de la materia

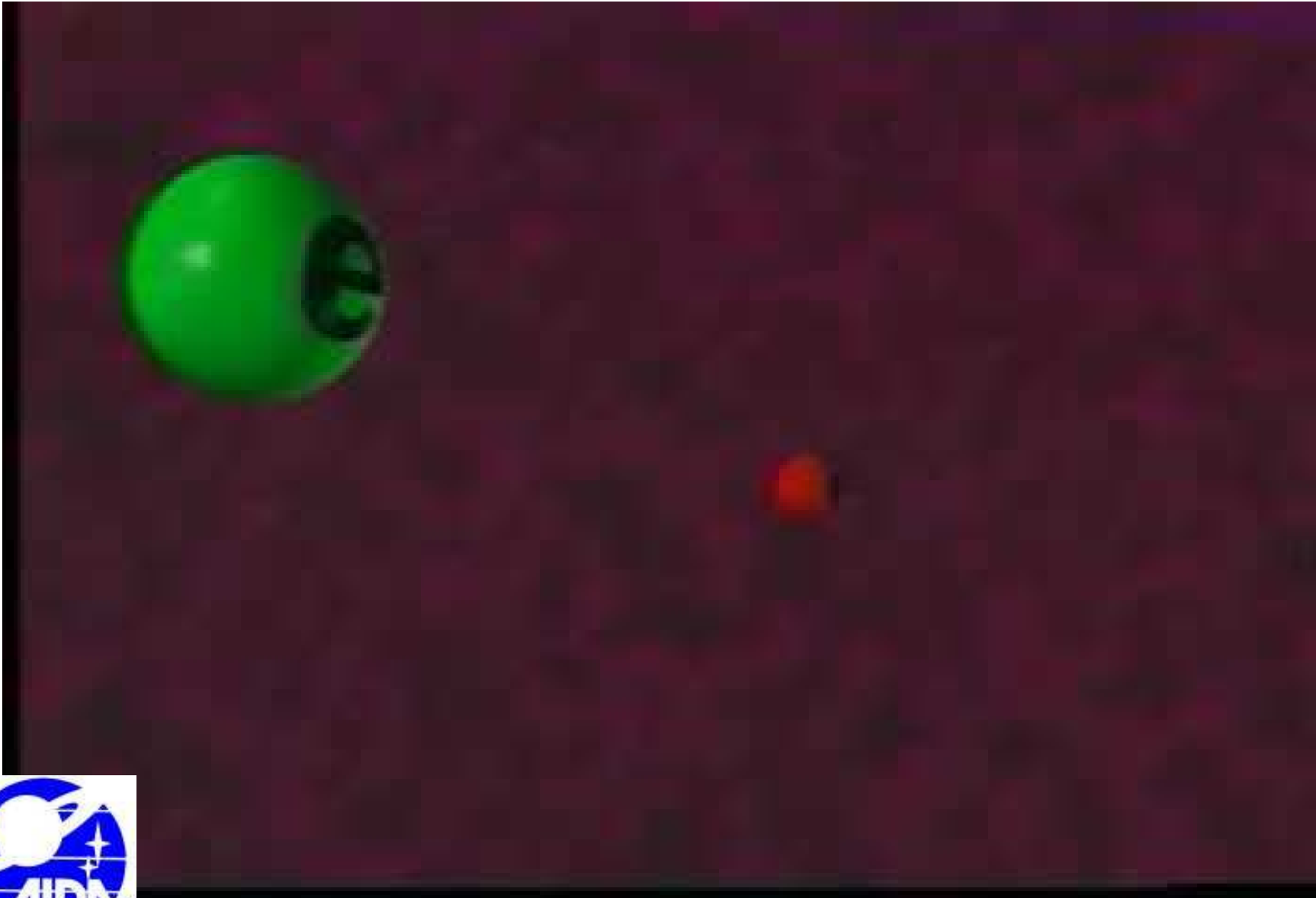
Tiempo	Temperatura
13,8 s	3.000 millones de grados Kelvin

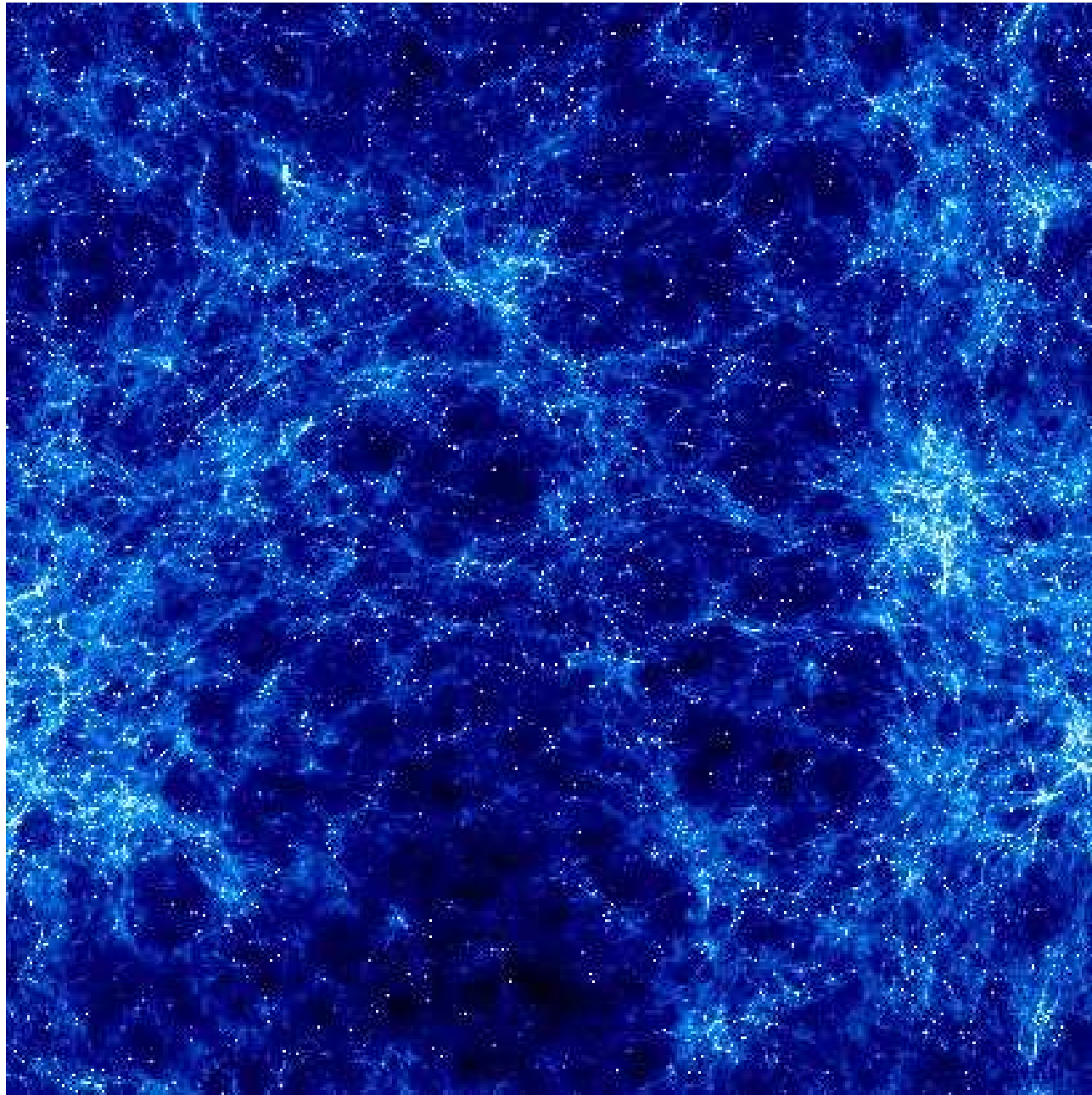


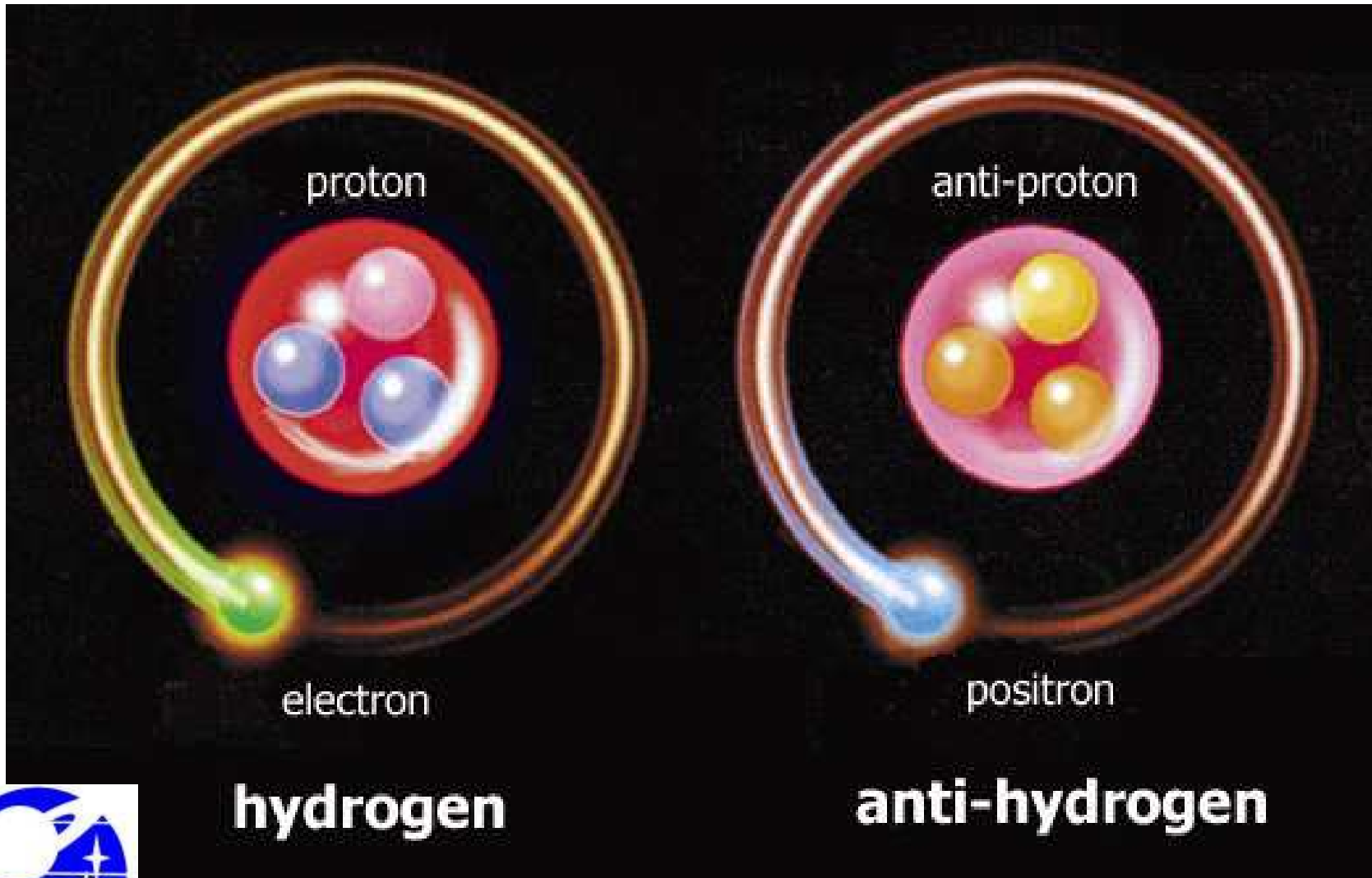
Los electrones (materia) y los positrones (antimateria) se aniquilan generando una gran cantidad de energía en forma de fotones.







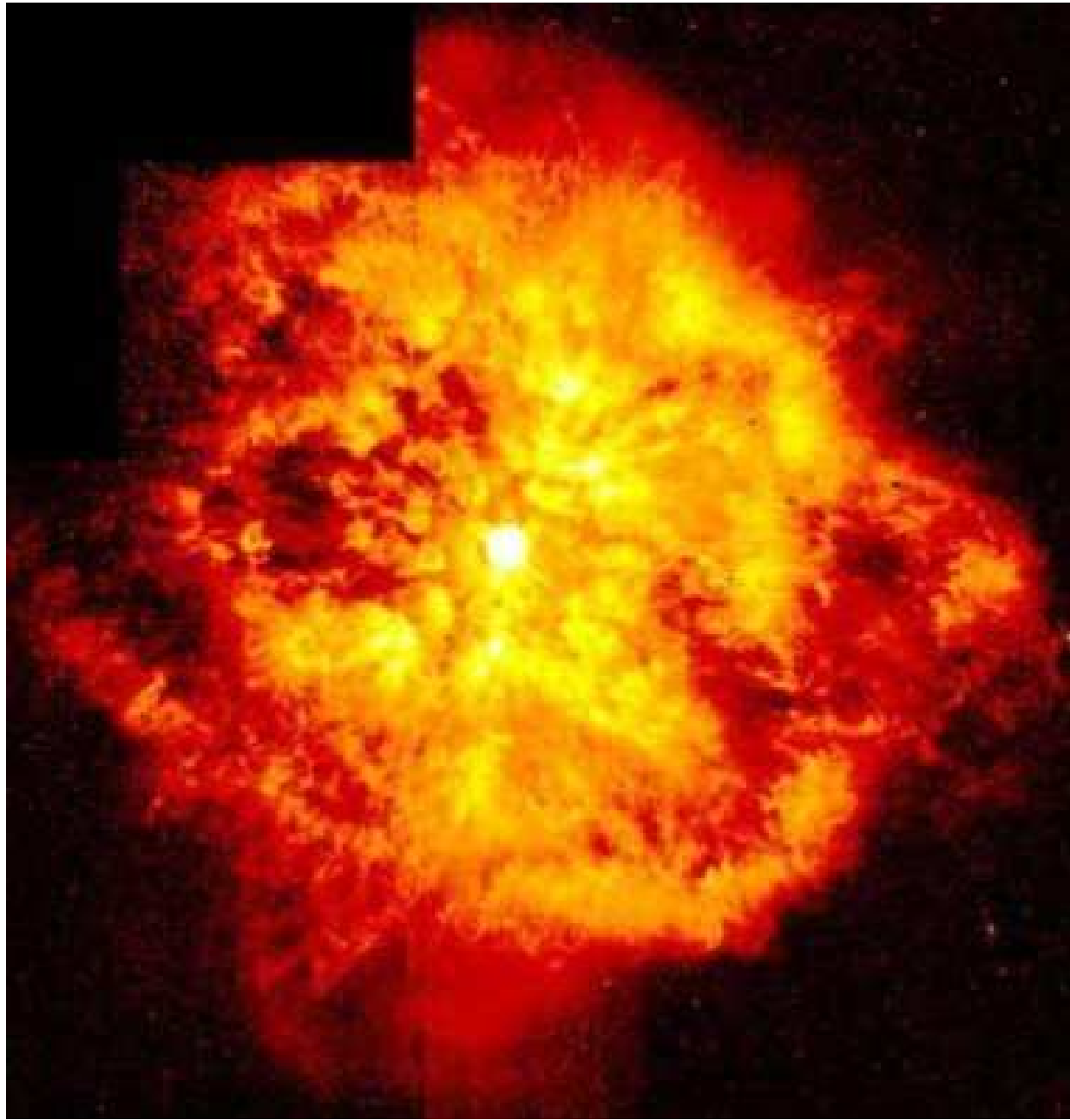




Nucleosíntesis Primordial

Tiempo	Temperatura
3 min	1.000 millones de grados Kelvin





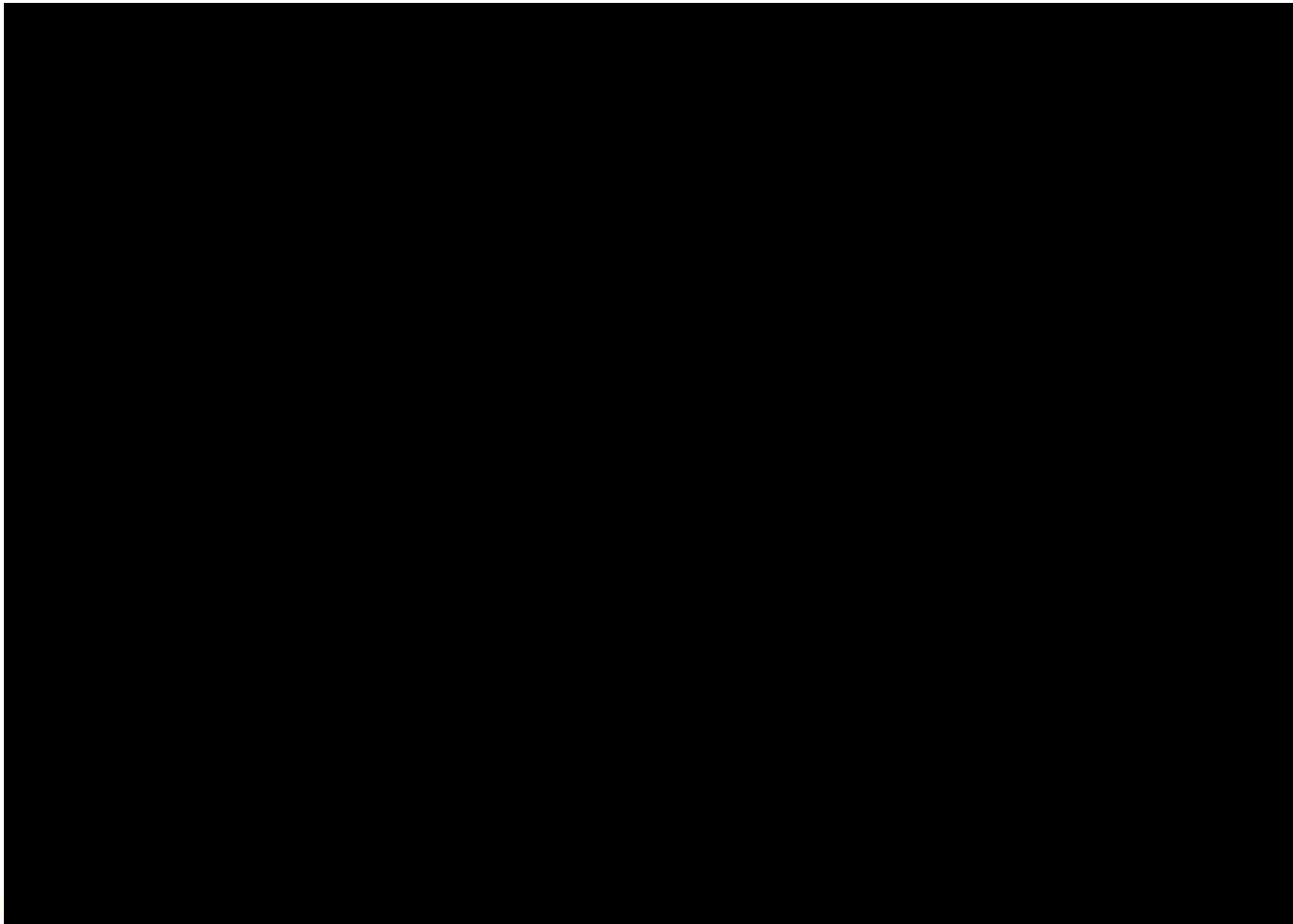
- *Inició 100 segundos después del gran estallido.*
- *Todo el proceso se llevó a cabo en tan solo 3 minutos.*
- *Formación de H_2 , He y Li.*

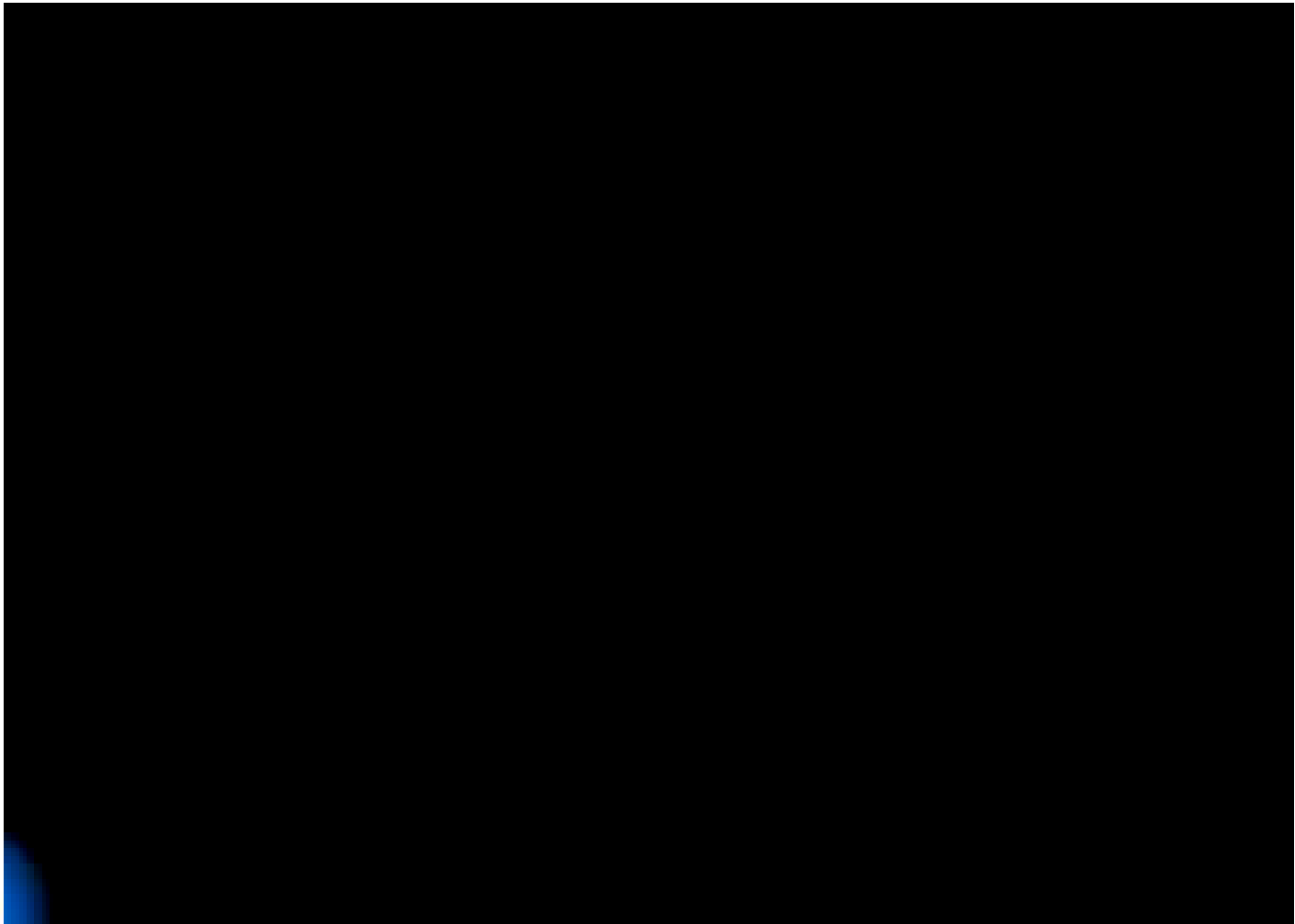


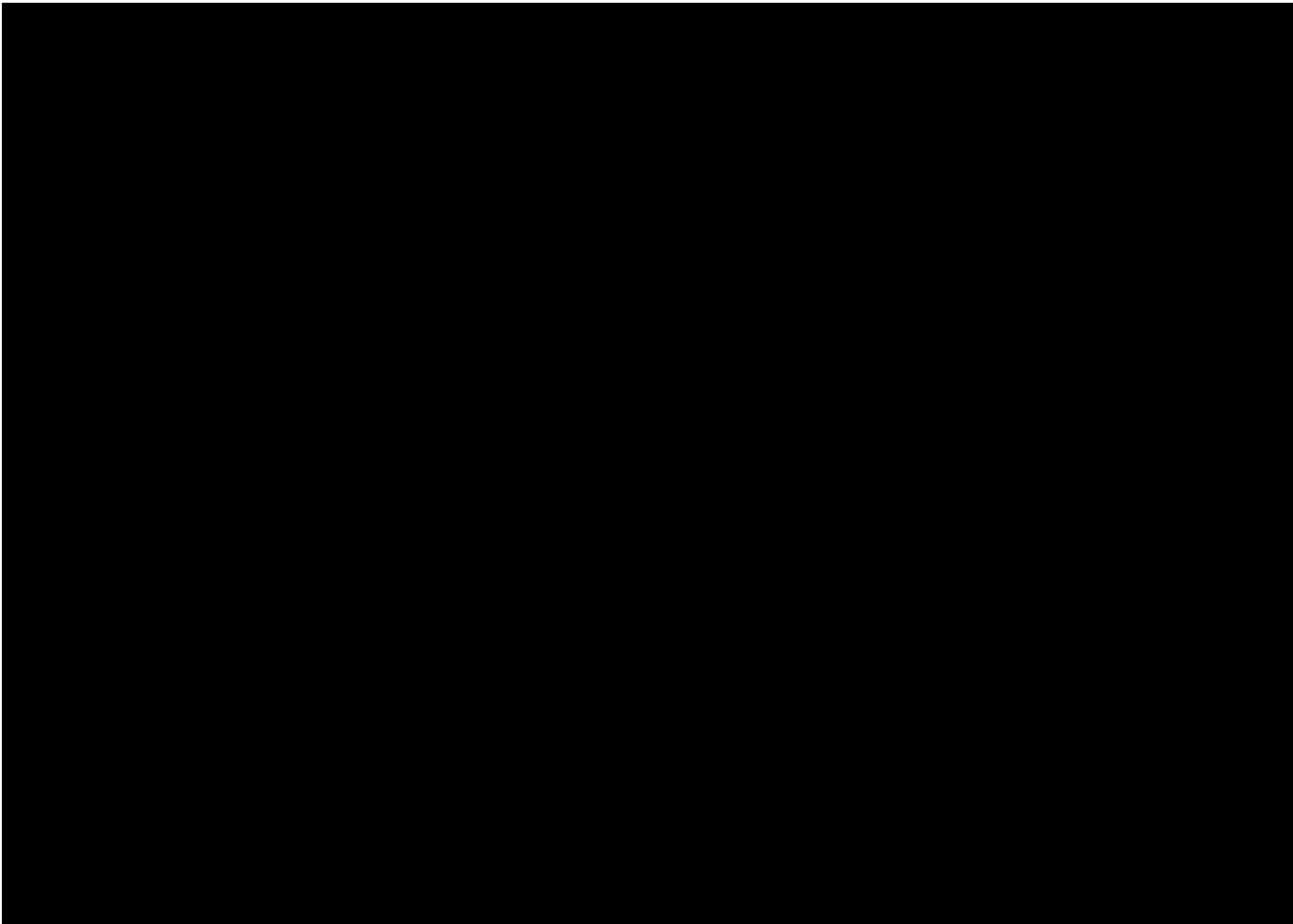


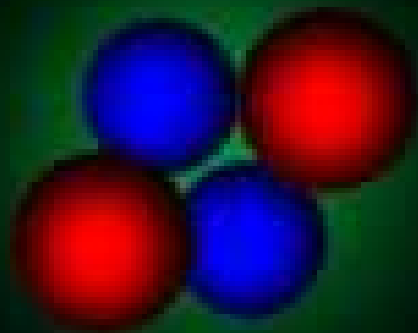
HIDRÓGENO



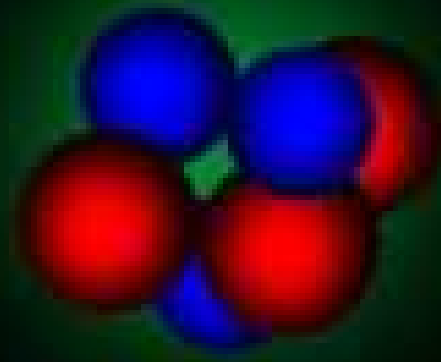








HELIO



LITIO



protón



neutrón



Fin de la Nucleosíntesis Primordial

Tiempo

34 min

Temperatura

300 millones de grados Kelvin



Nacen los Átomos

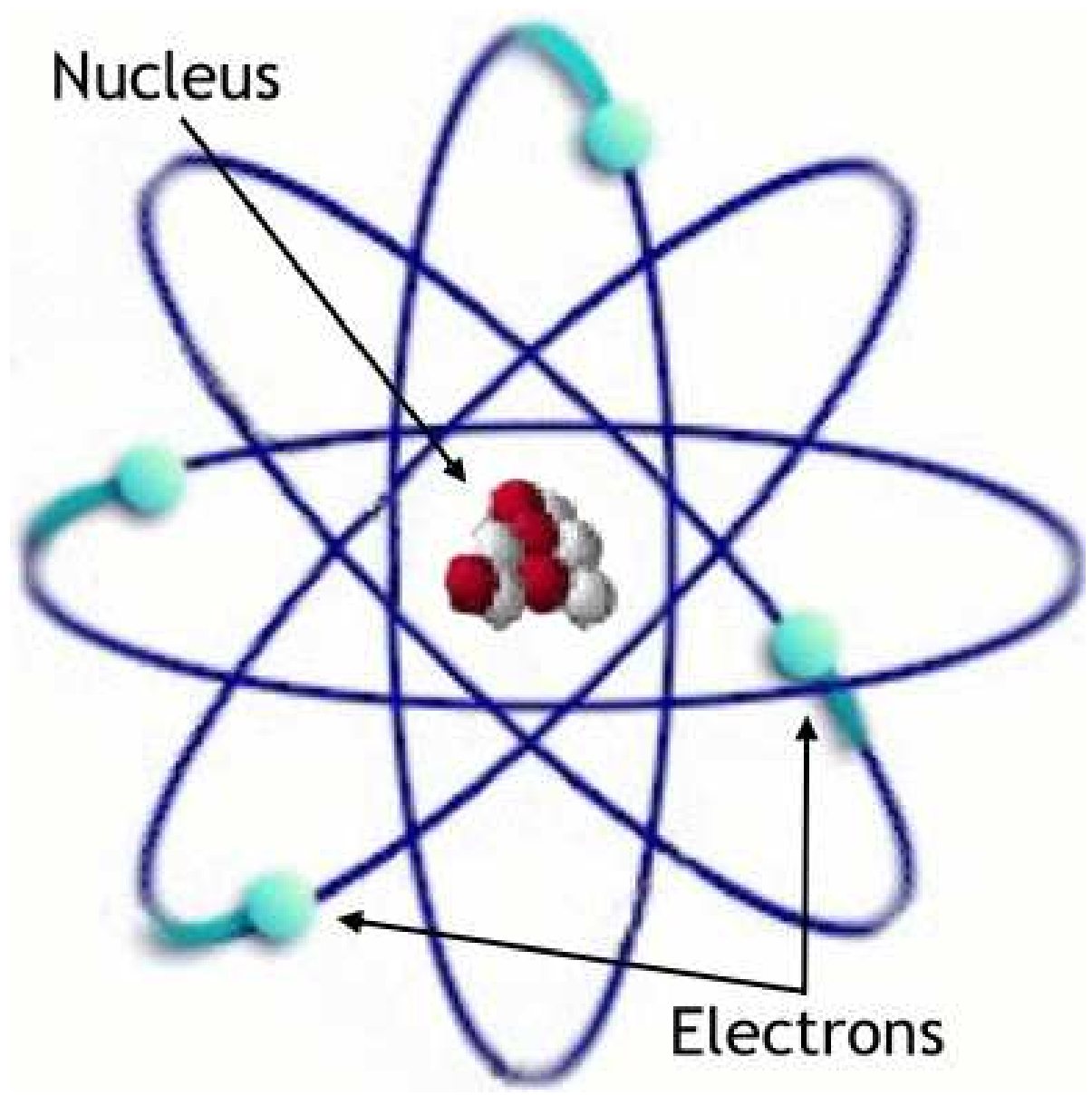
Tiempo

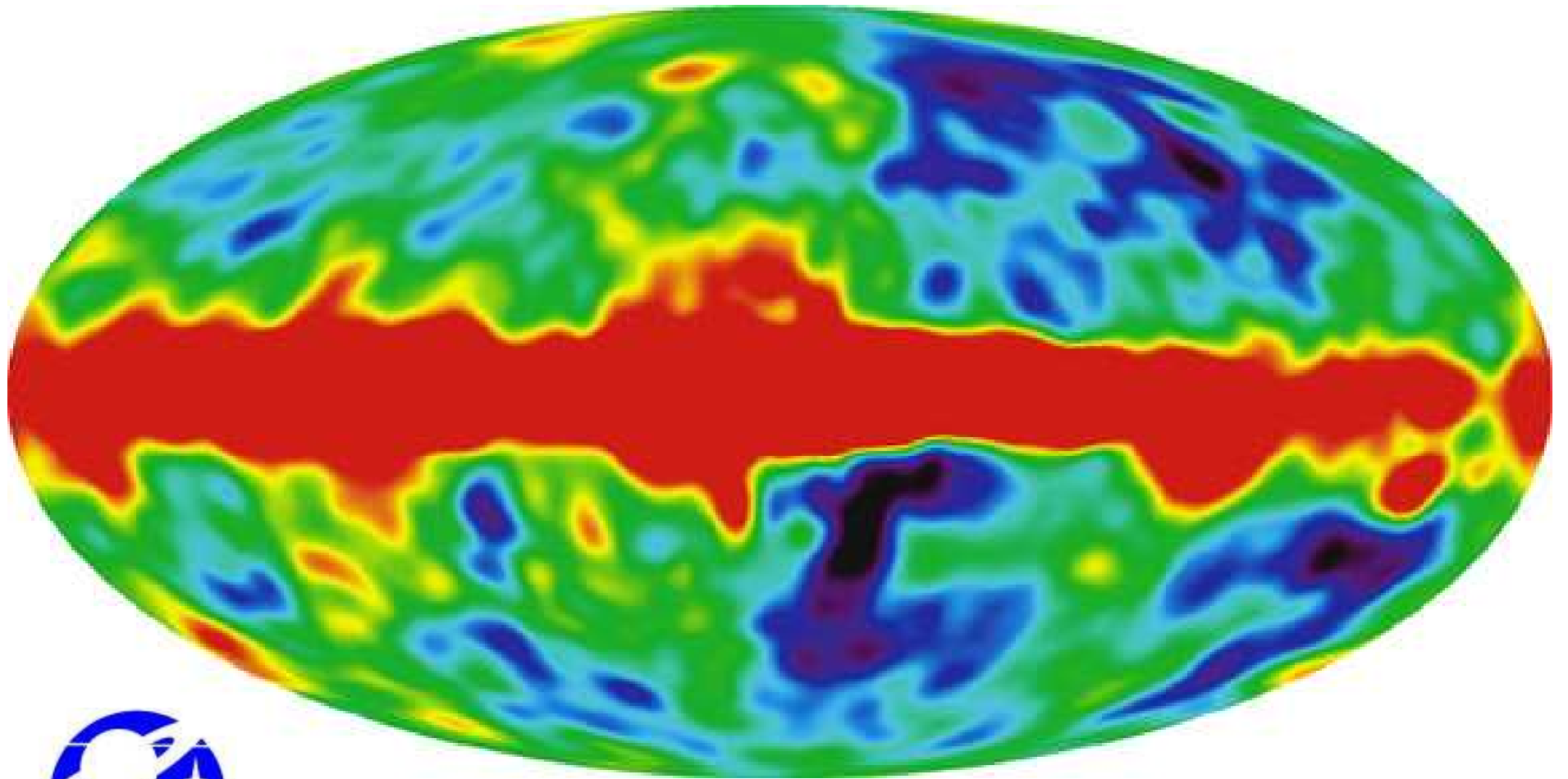
380.000 Años

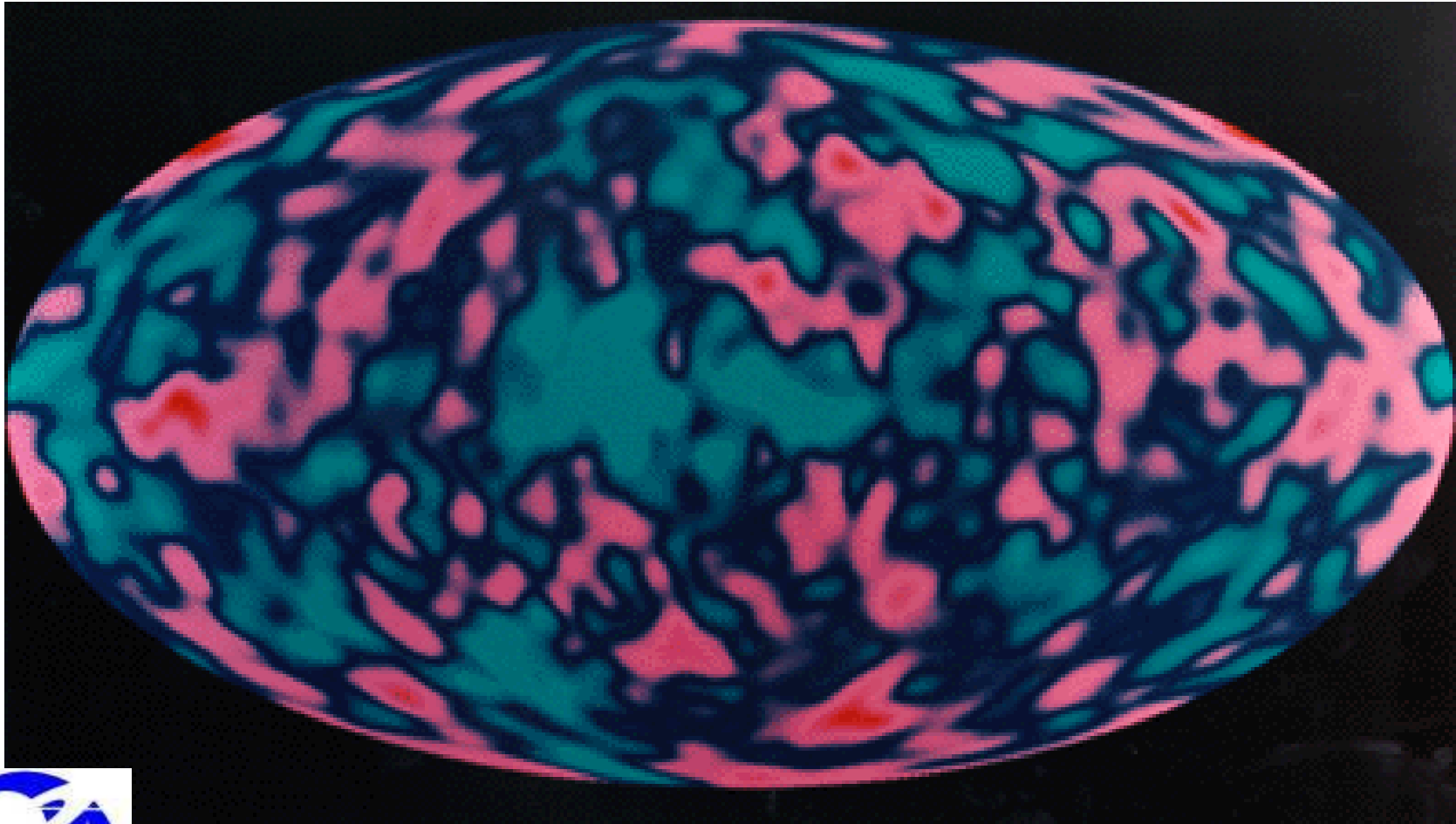
Temperatura

3.000 grados Kelvin



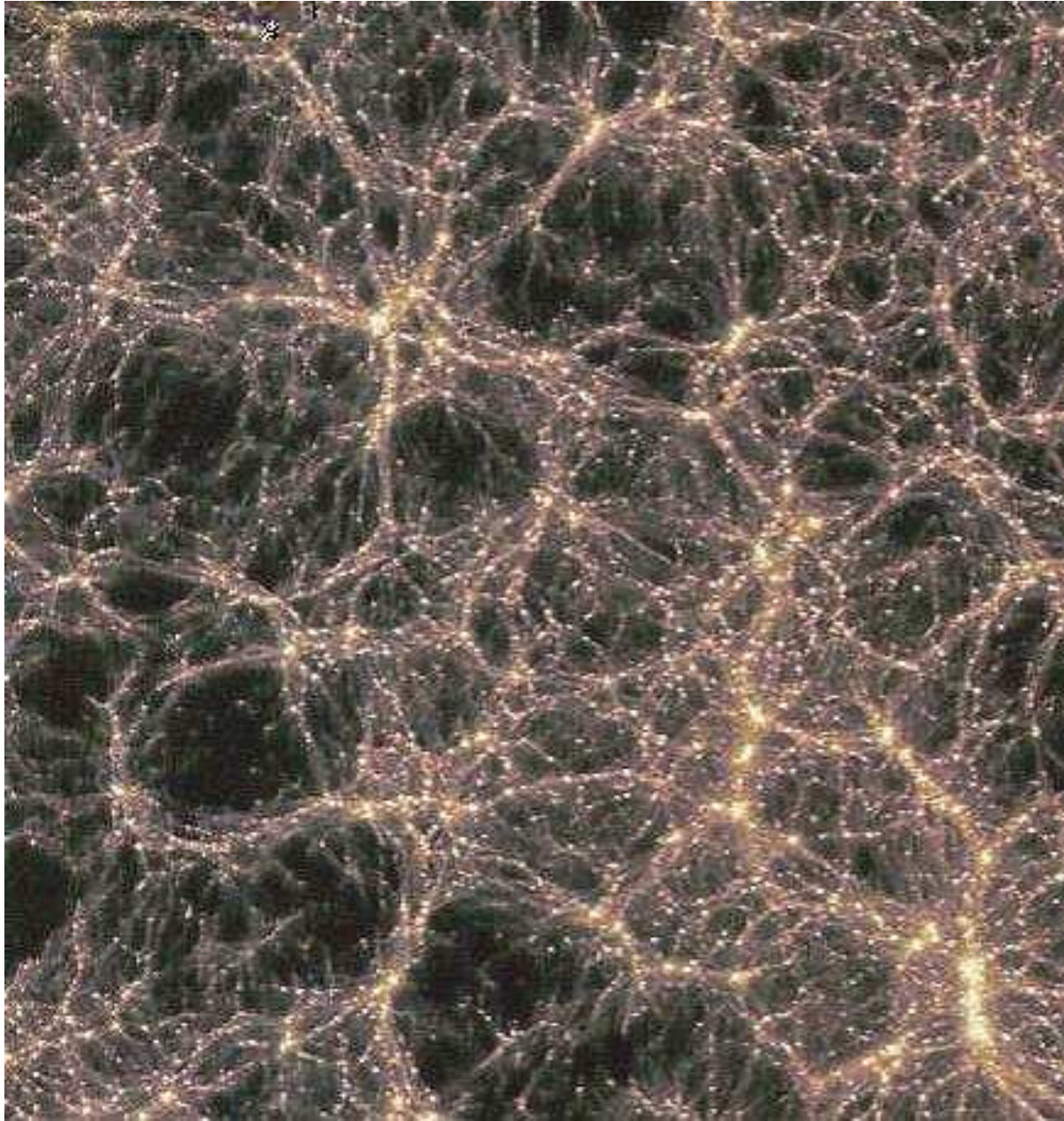




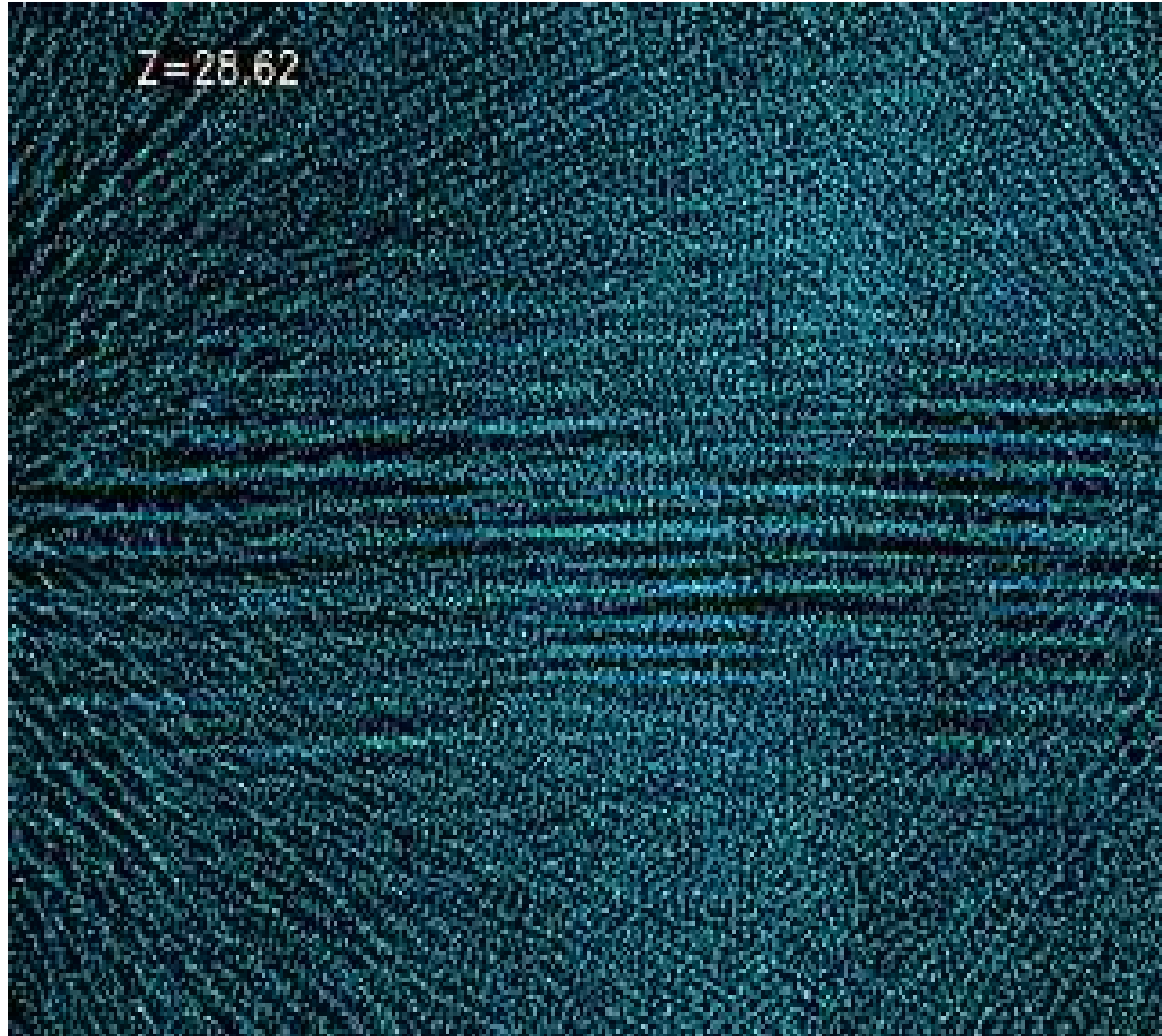


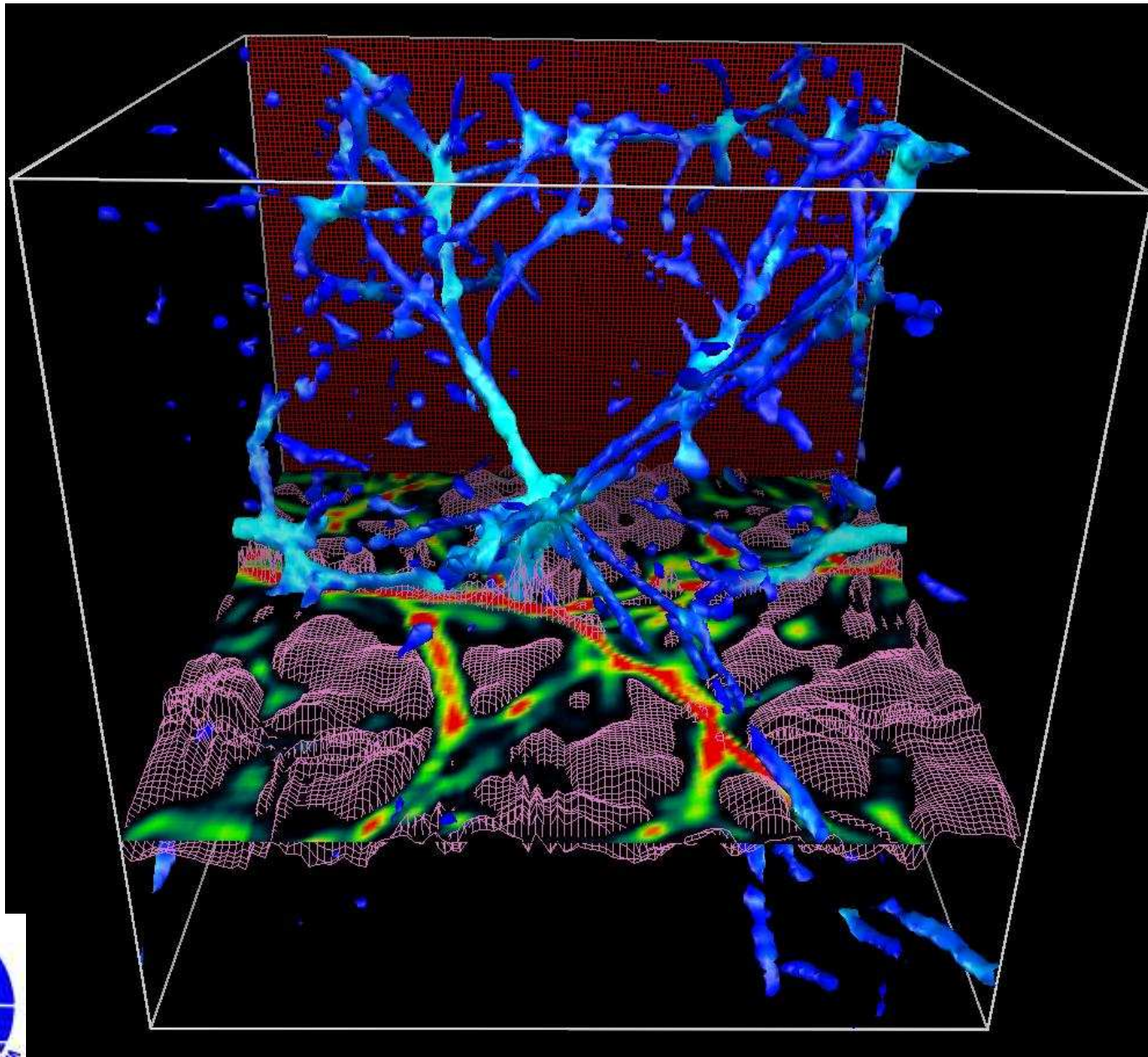
Formación de Estructuras





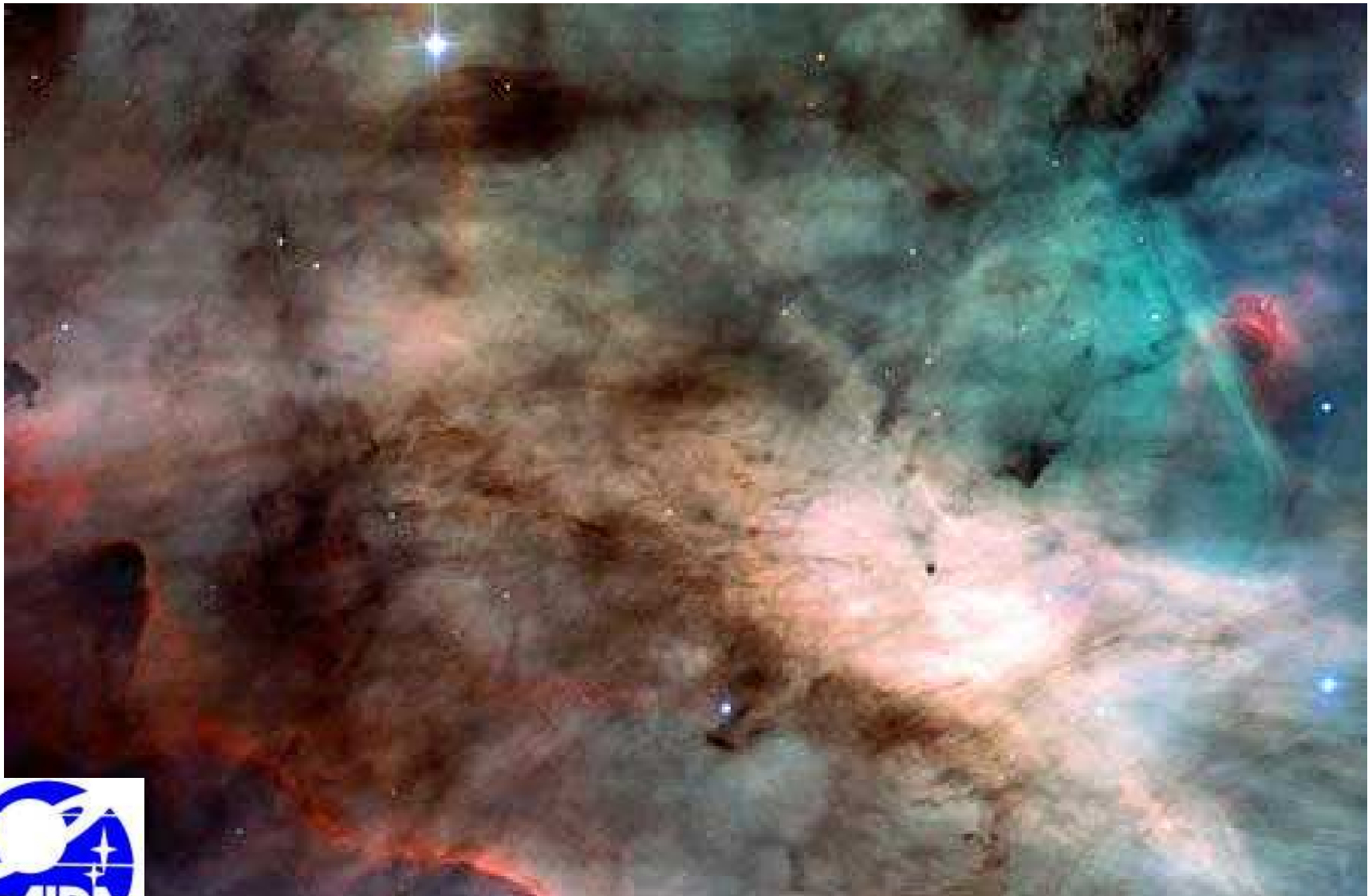
$Z=28.62$





***El Reino del
Hidrógeno, Helio y
Litio***





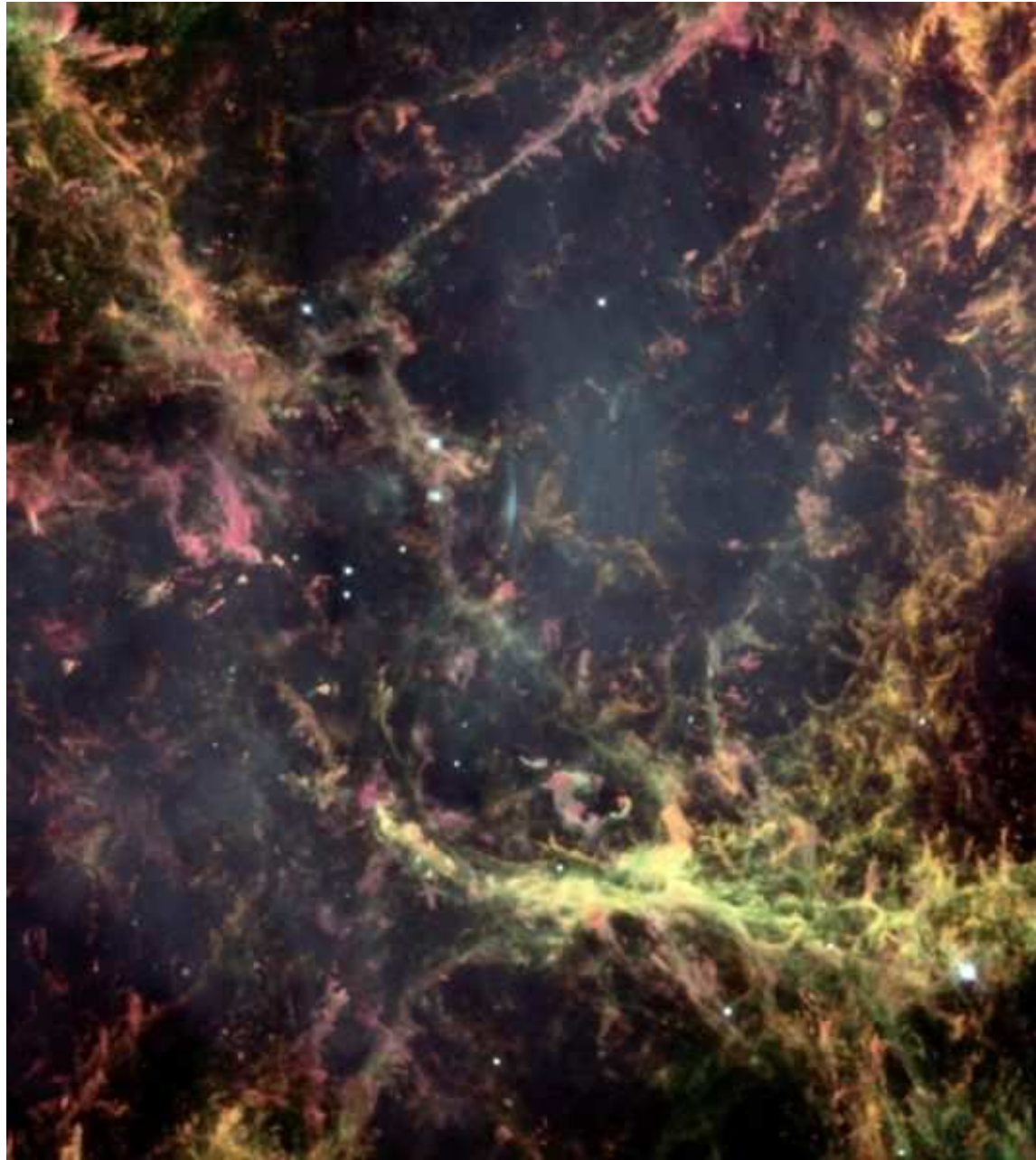


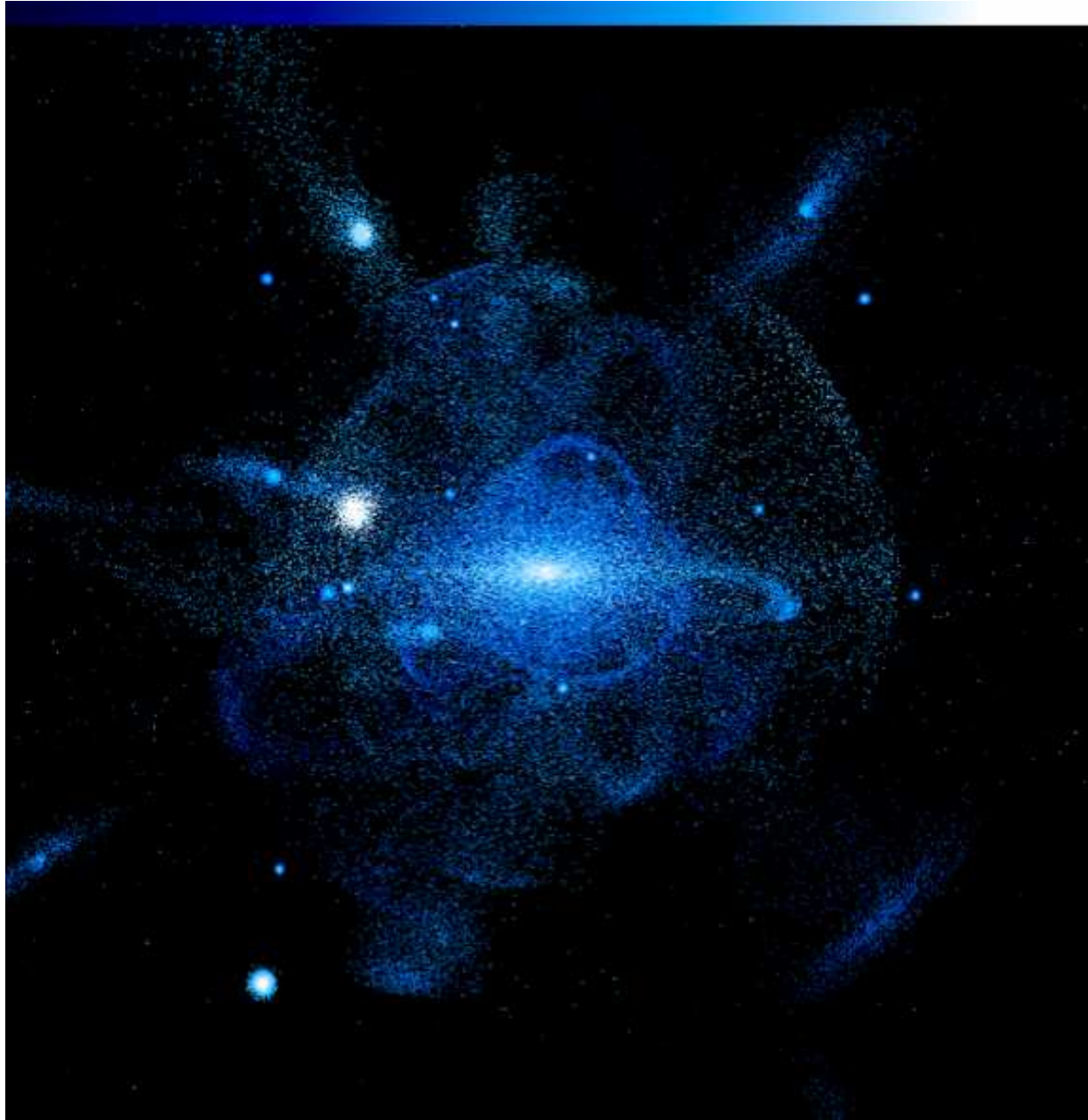


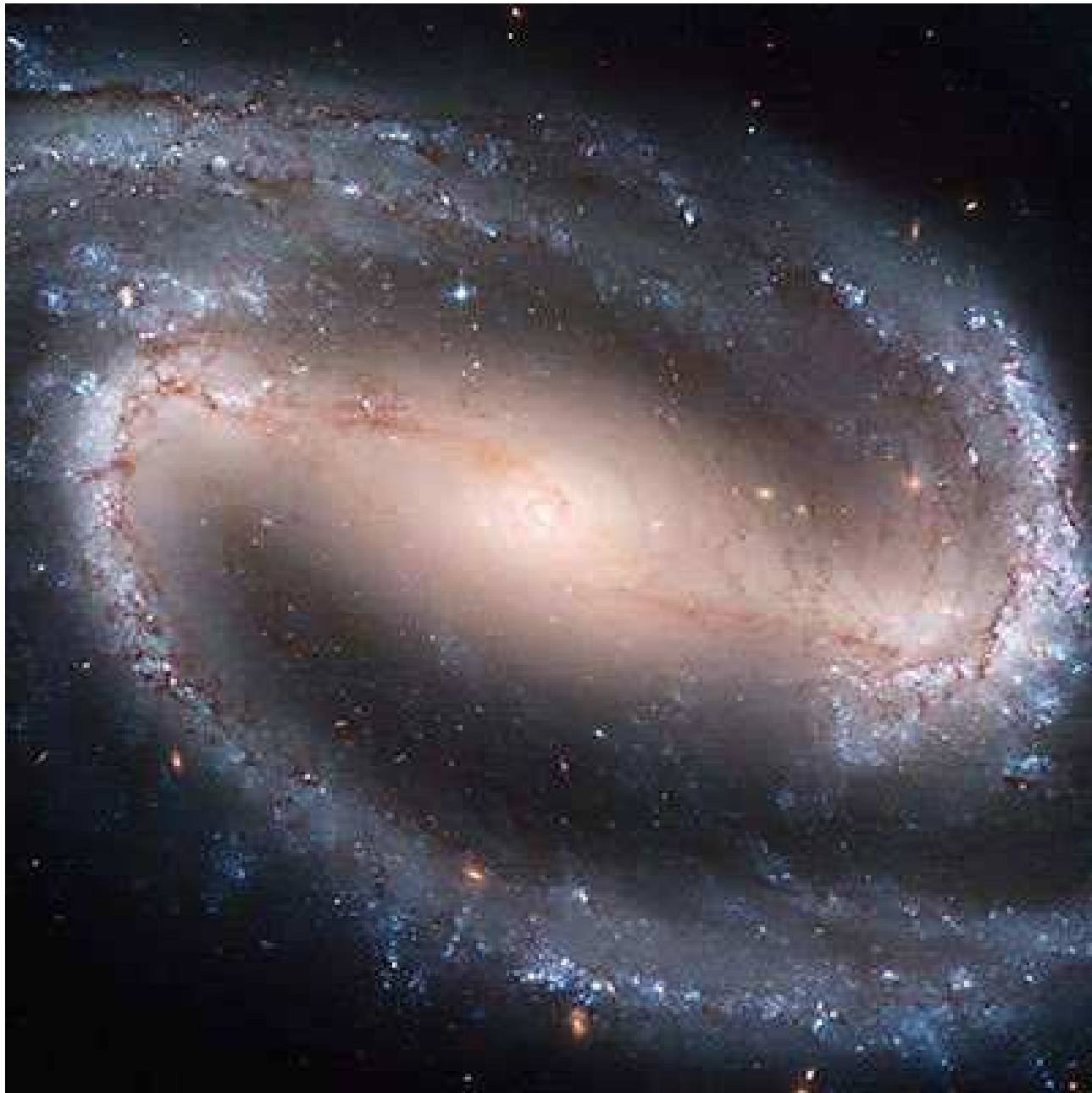


Galaxias en Formación

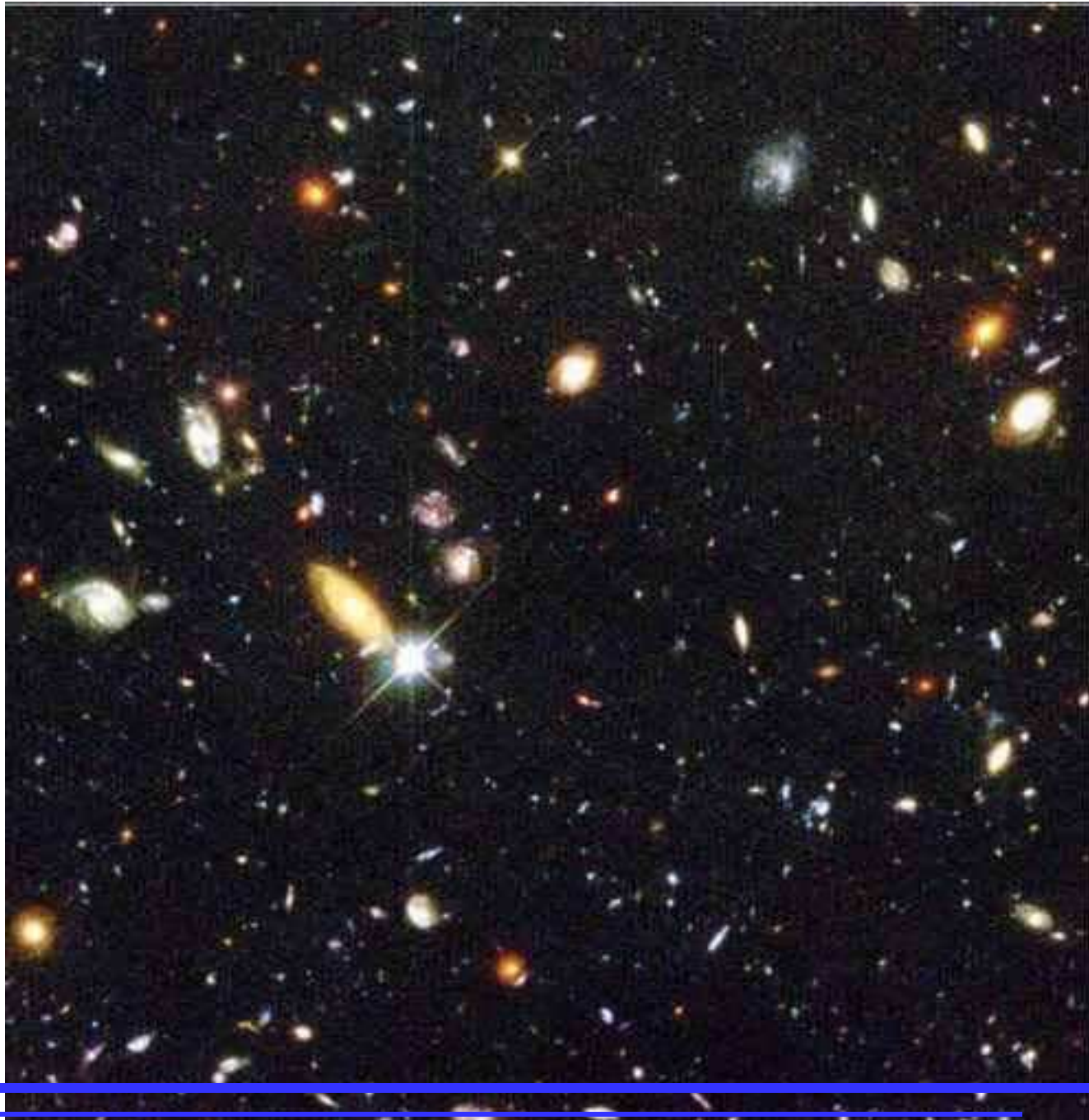








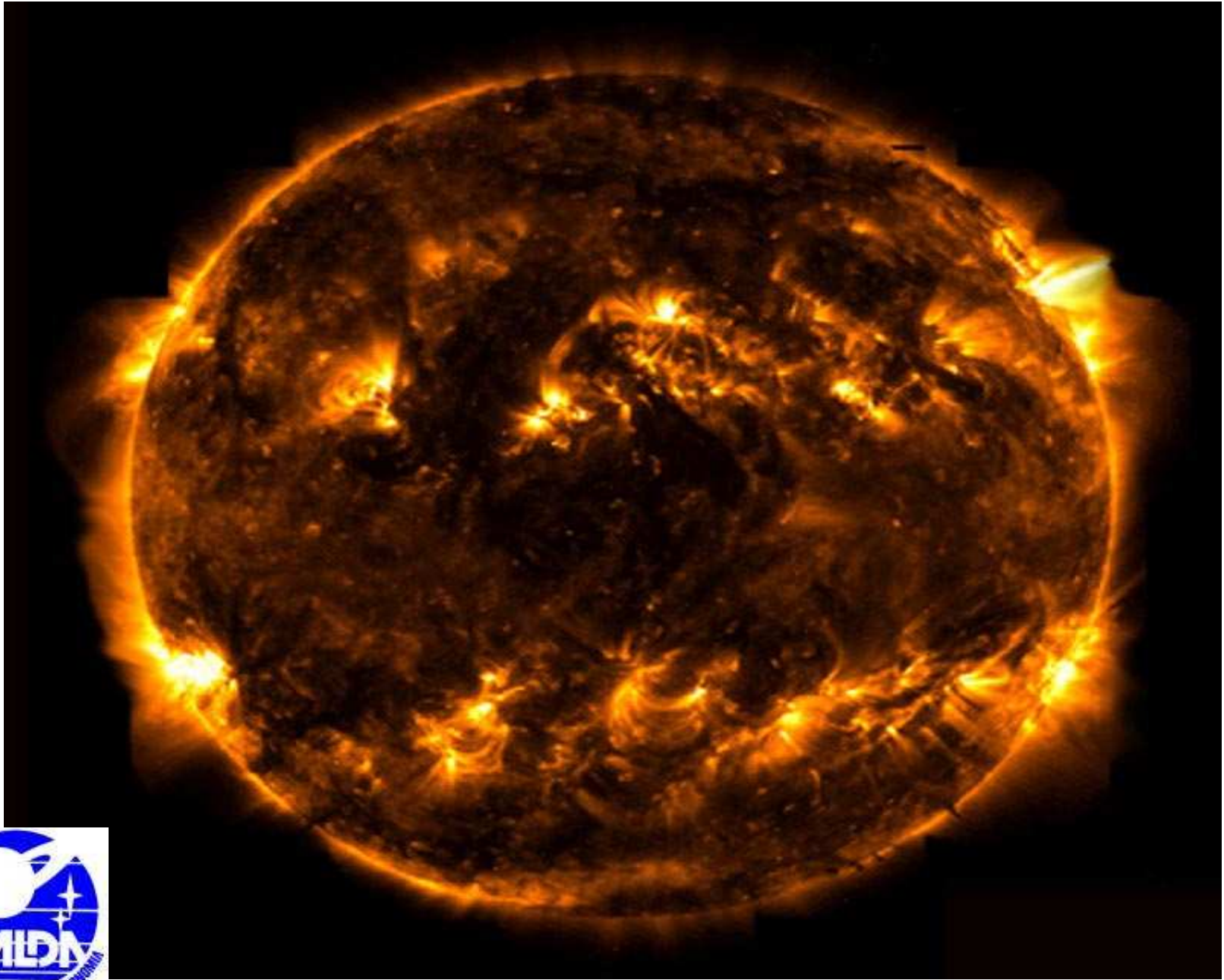




Evolución Estelar



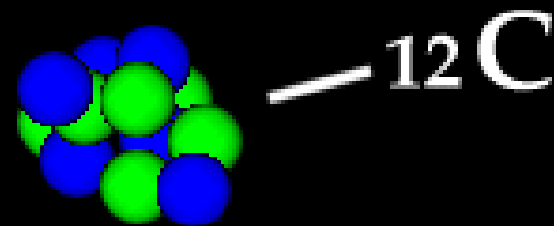


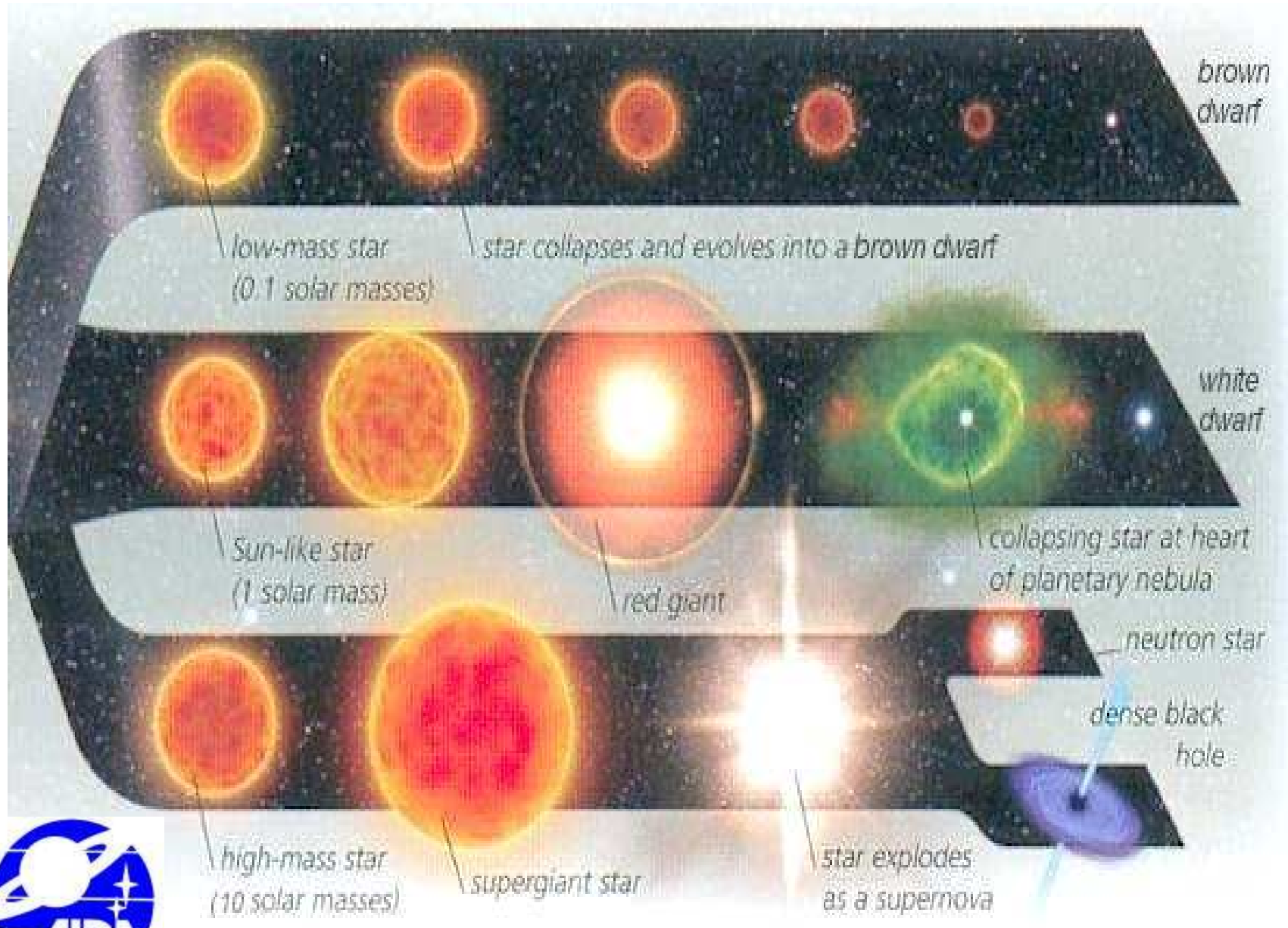


Carbon-Nitrogen-Oxygen (CNO) Cycle

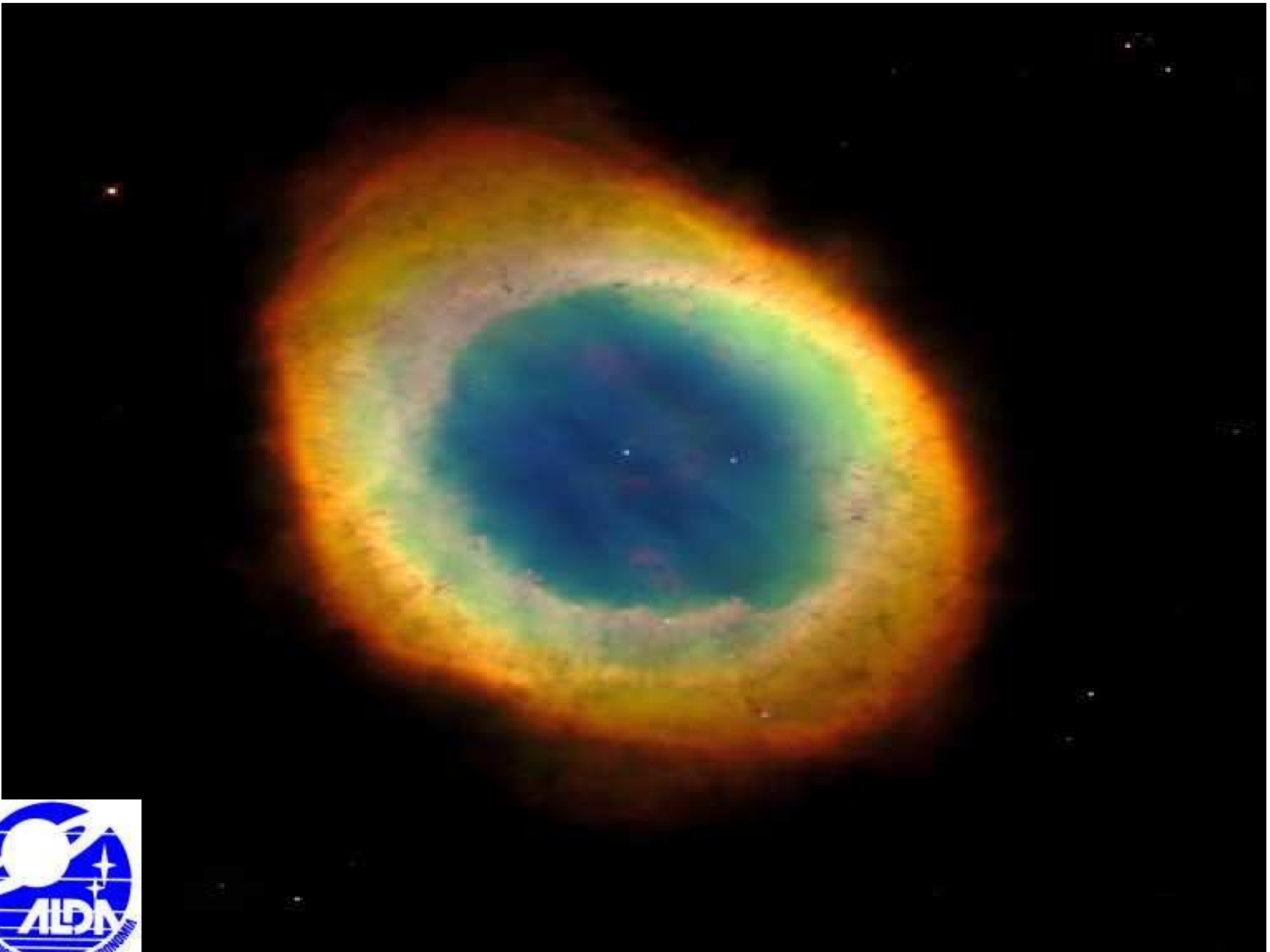
● — Neutron

● — Proton



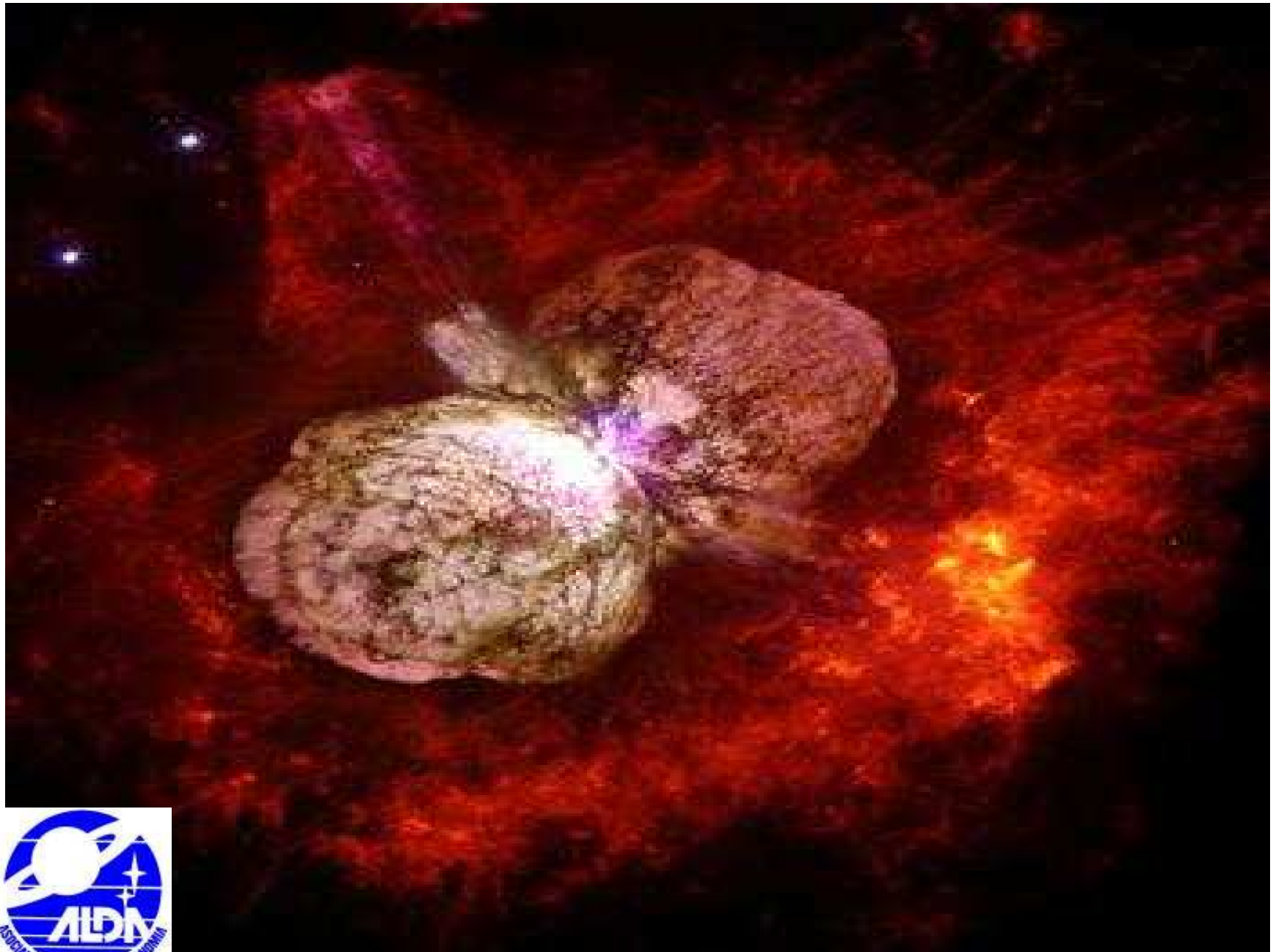




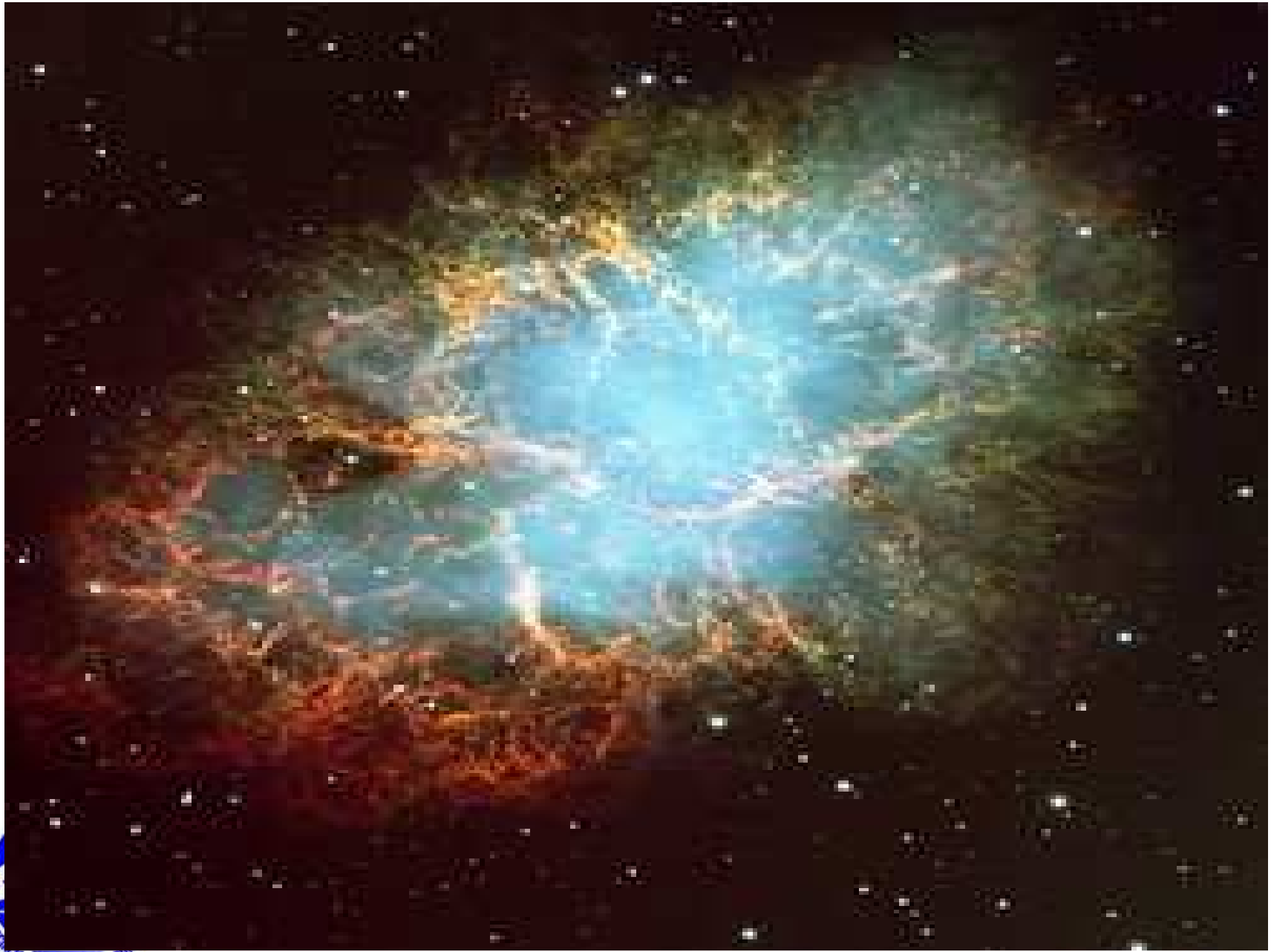




www.cosmovision.com.mx



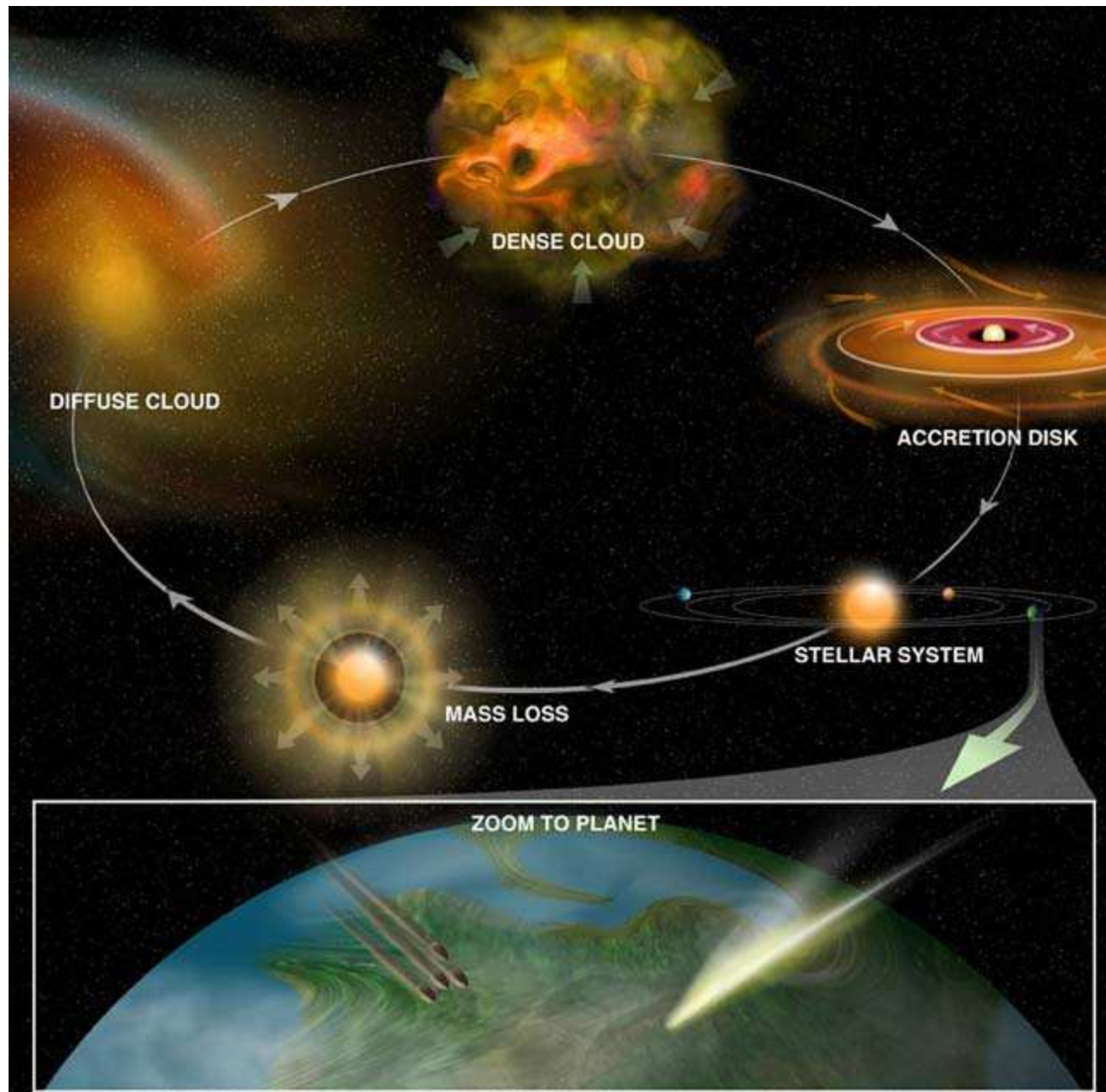


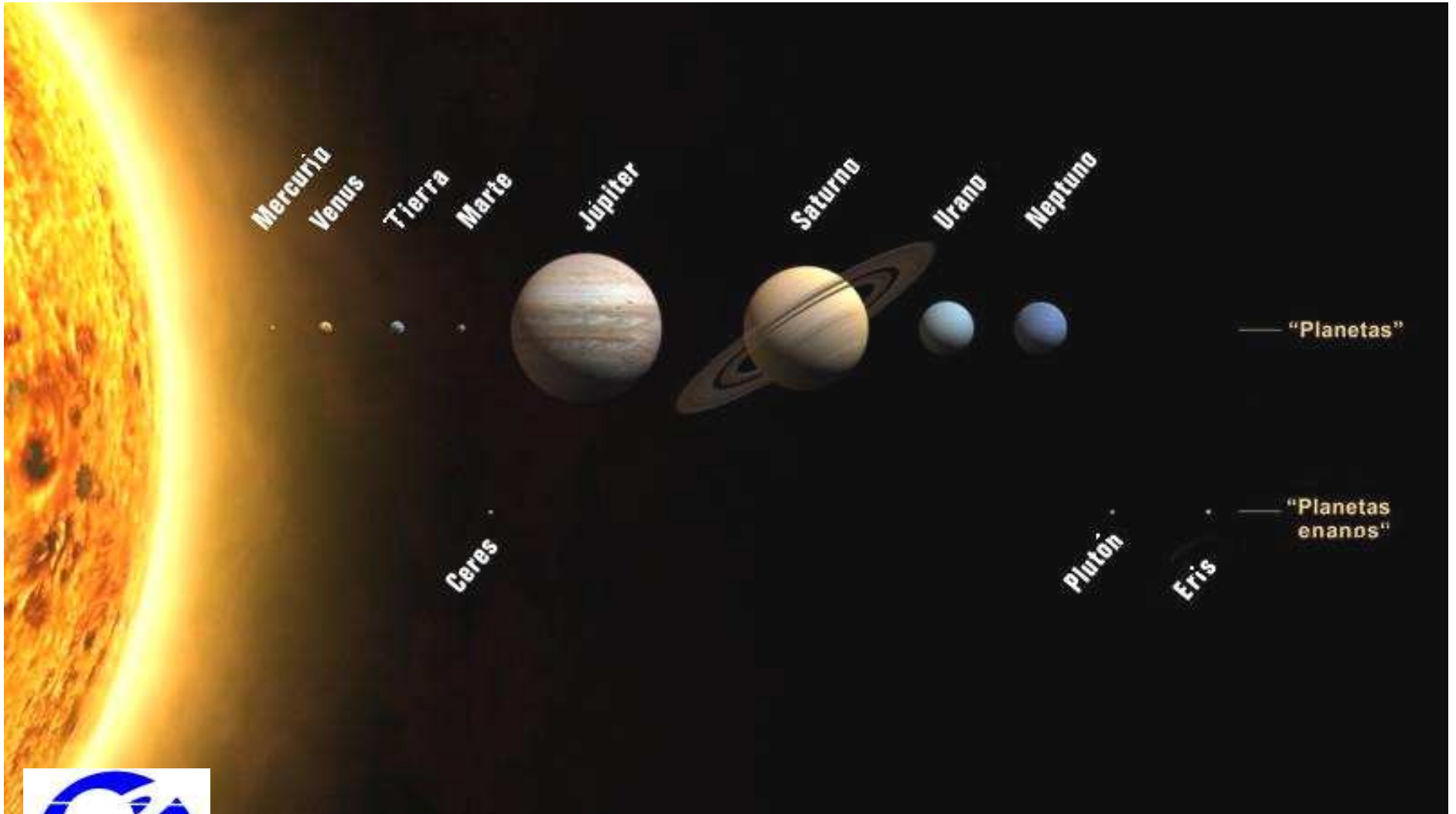




Origen de los sistemas planetarios

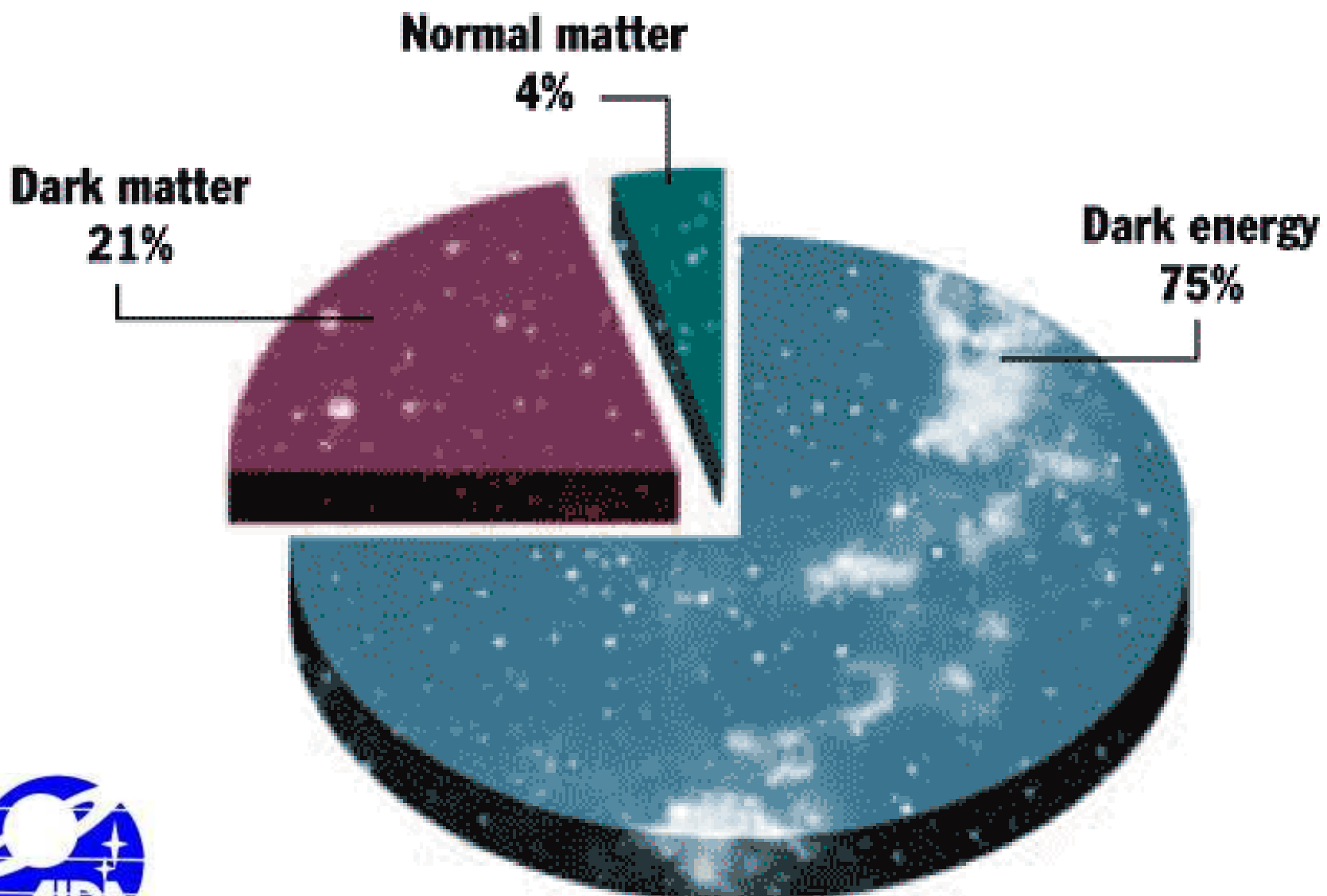






Abundancia Cósmica de la Materia





De nuevo en la Tierra...





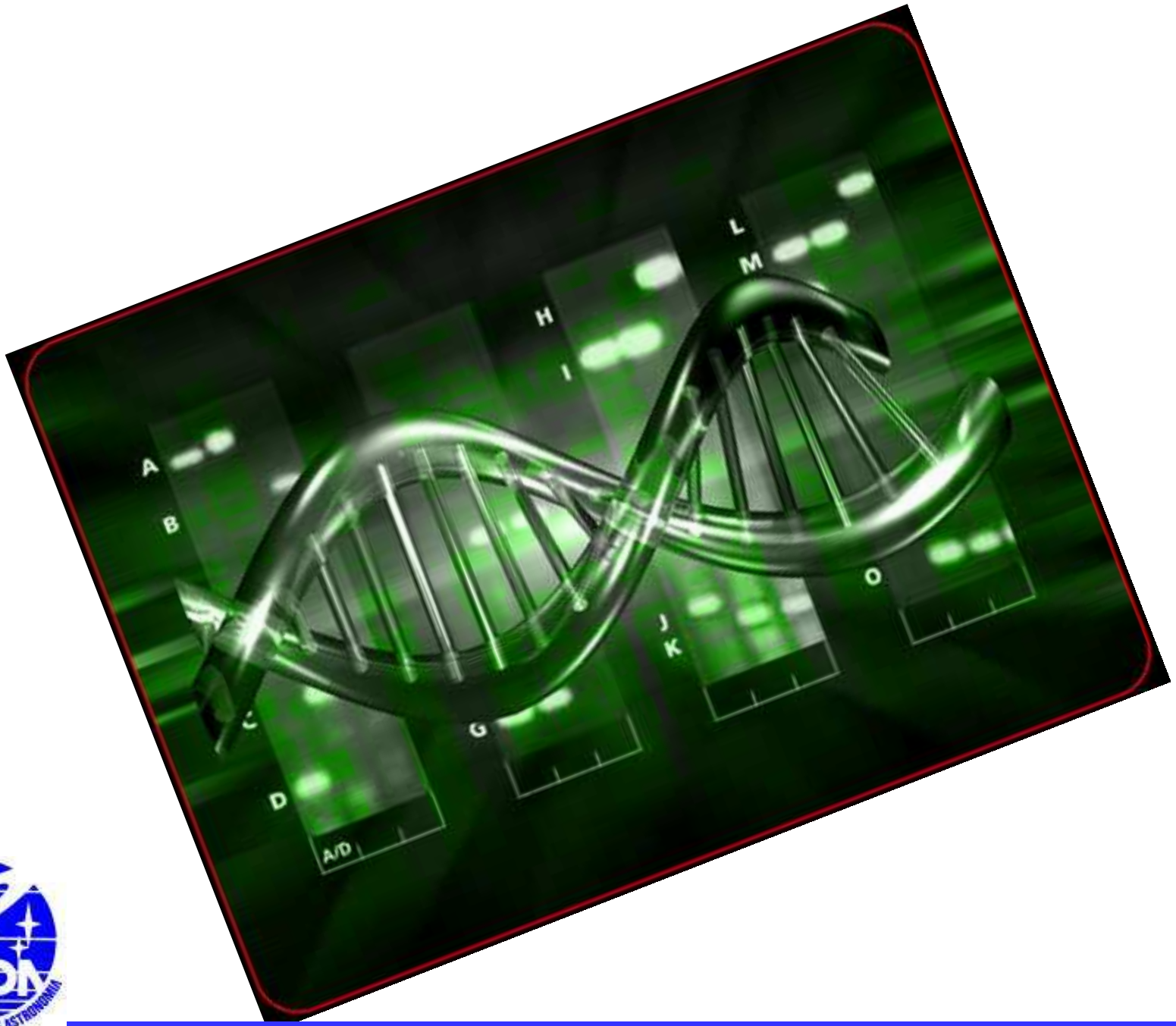


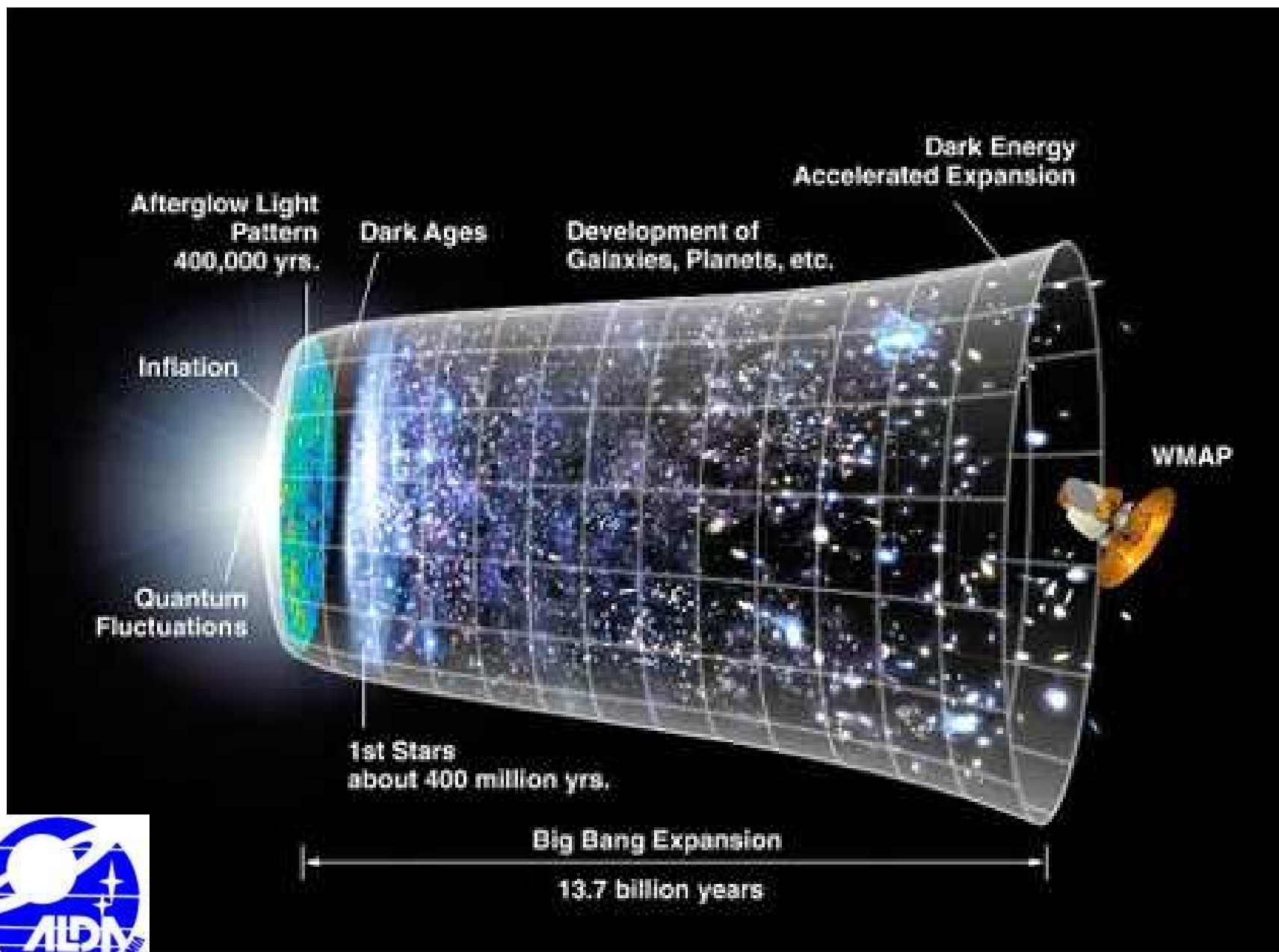












*Esta historia
continuará...*



Página Web de ALDA

www.tayabeixo.org



¡¡ Gracias !!

