

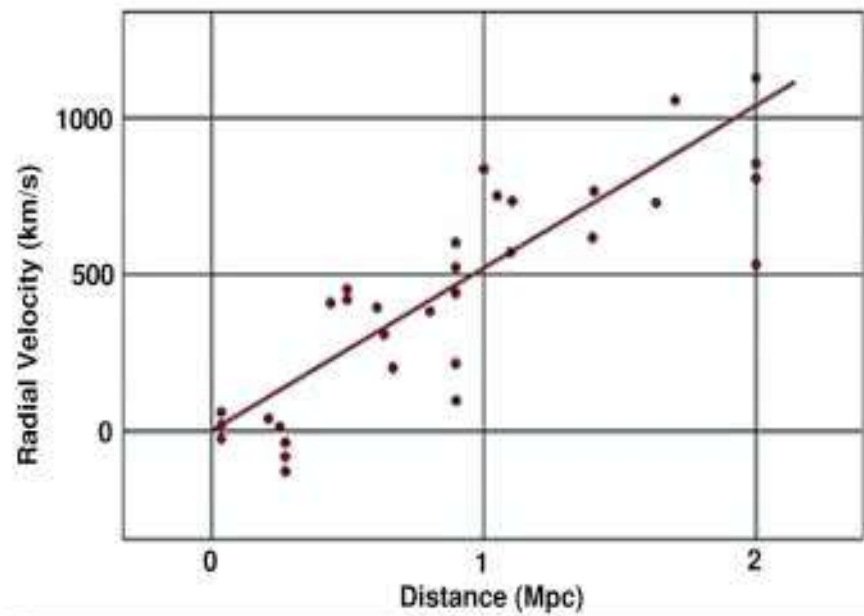
KOSMOLOGIE

van speculatie naar harde wetenschap

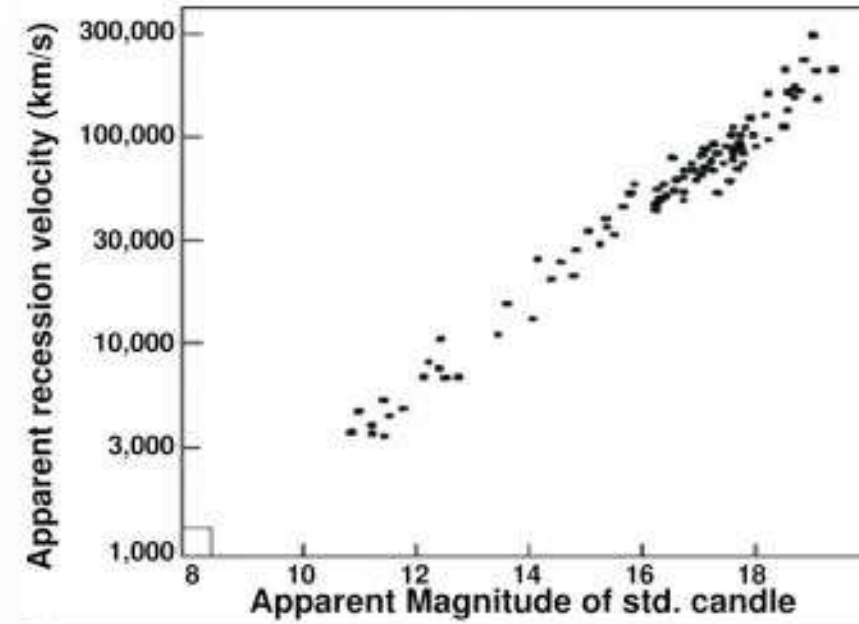


James Peebles
Princeton University, USA
*“for theoretical discoveries in
physical cosmology”*

KOSMISCHE EXPANSIE

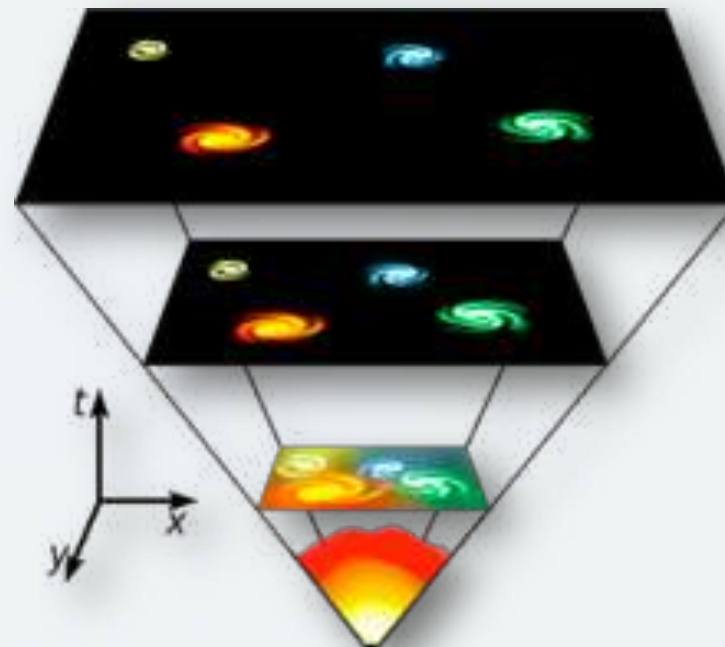


Hubbles' Original Data

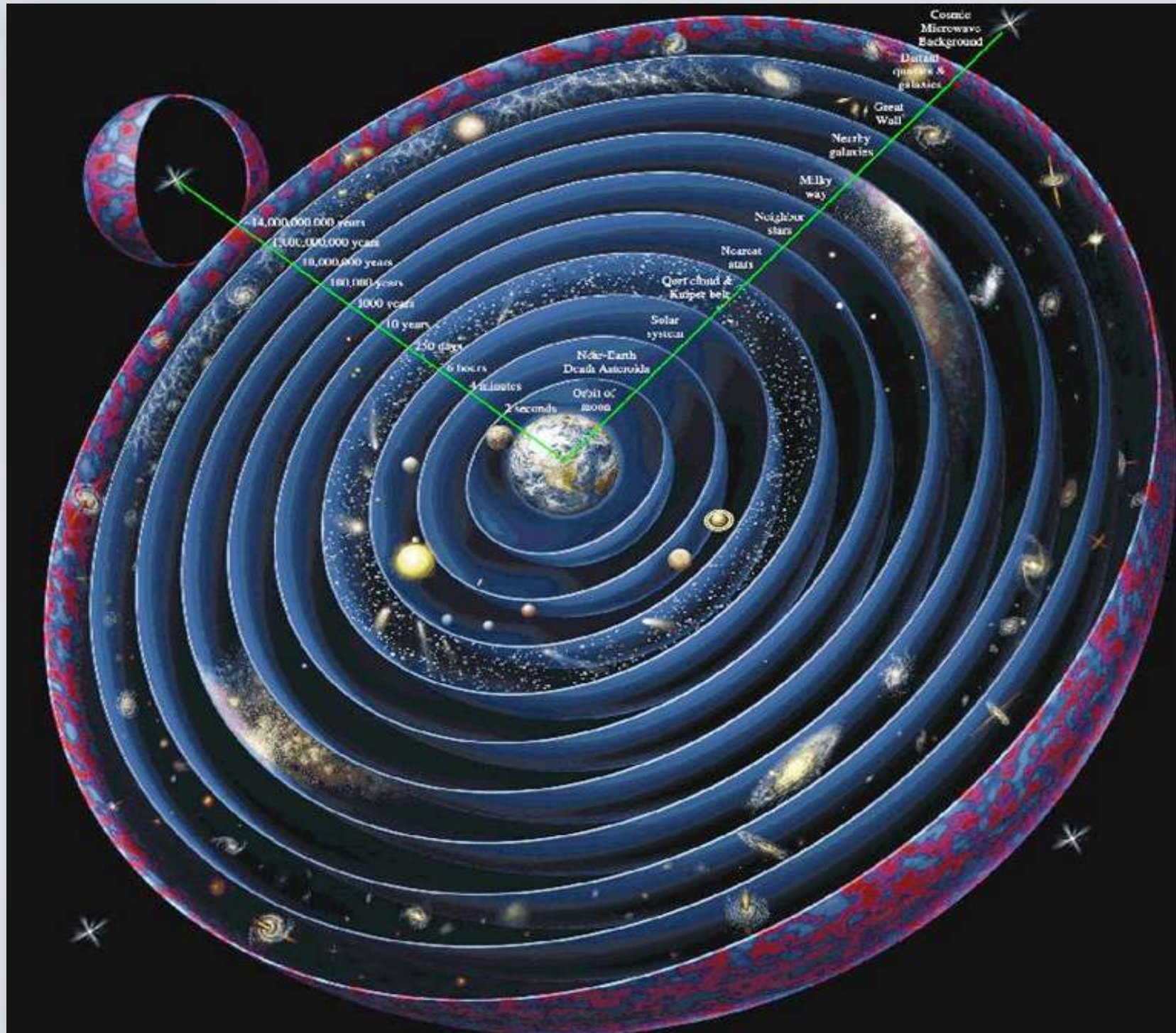


Modern Data

$$H_0 = 71 \pm 4 \text{ km/s/Mpc}$$



KOSMISCHE ARCHEOLOGIE



Gamov, jaren 30

Een hete oerknal

Nucleosynthese
Helium en waterstof

and
Big Bang Theory,
You've Got To Be Kidding.

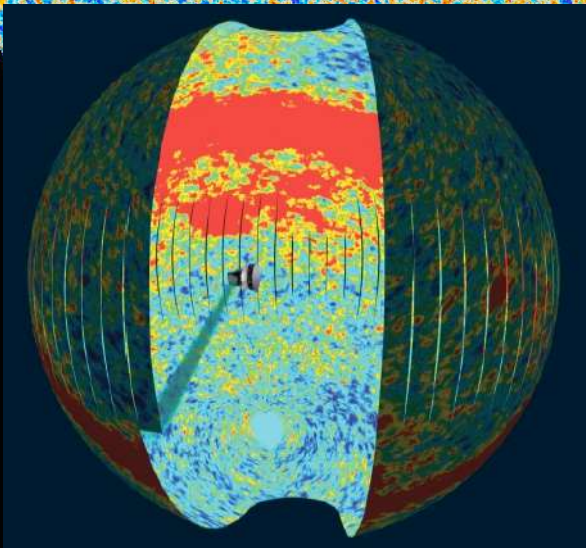
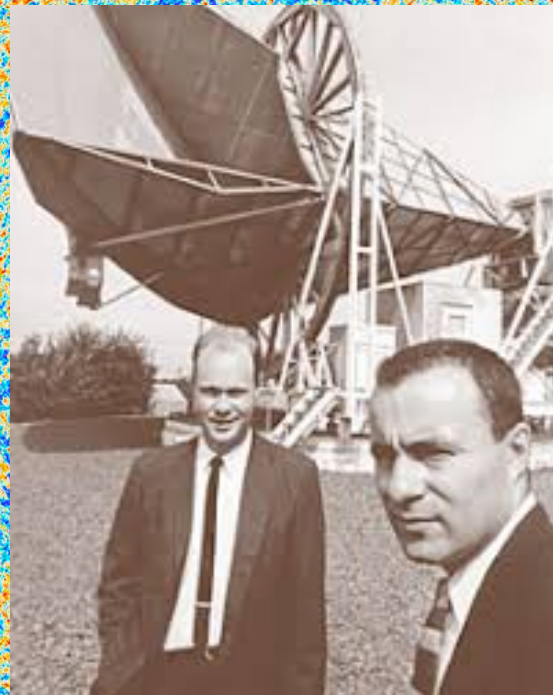
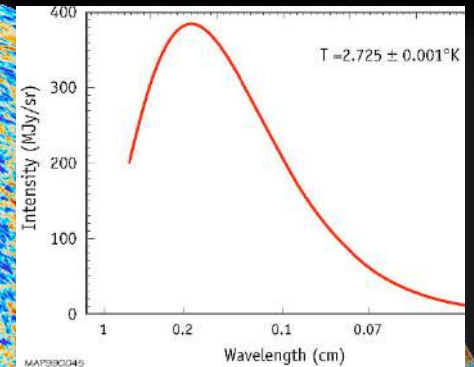
-God

2400

KOSMISCHE RUIS – CMB

Planck's Cosmic Microwave Background Radiation map
2013 march the 21th. thanks to ESA.

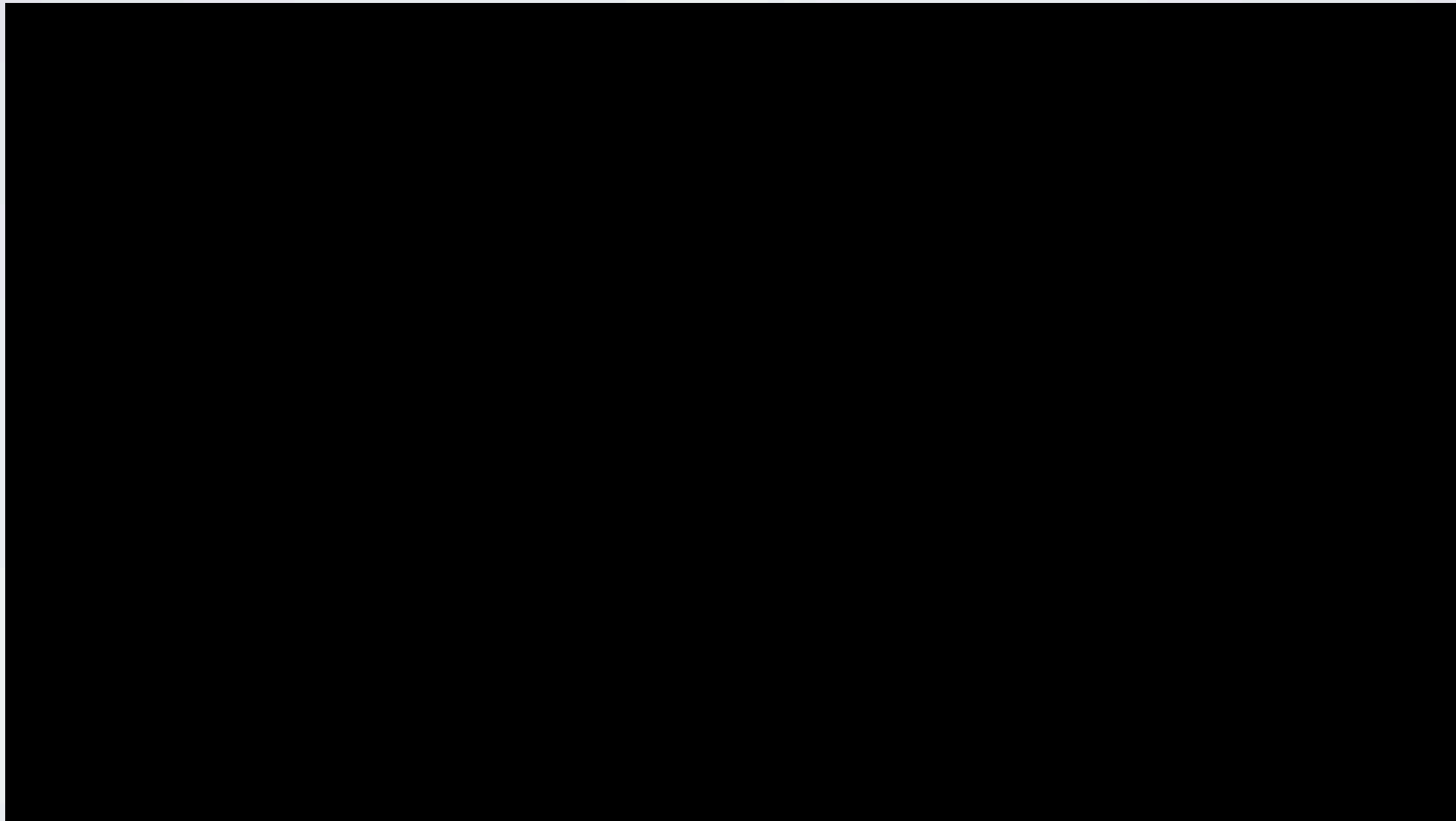
2.725 Kelvin



2 Nobelprijzen: Penzias & Wilson (1978) + Smoot & Mather (2006)

GROTE SCHAAAL STRUCTUUR

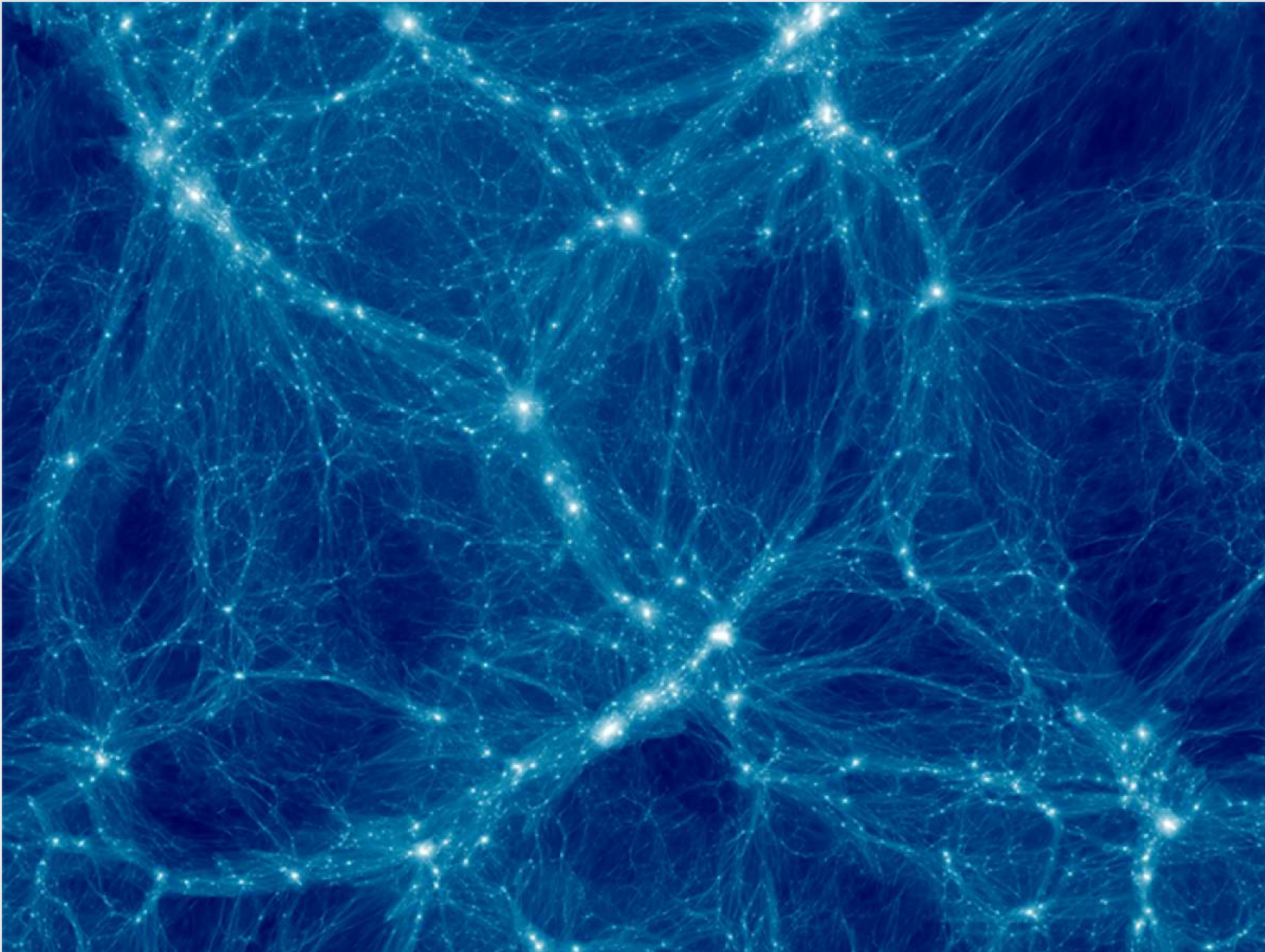
KOUDE DONKERE MATERIE



Dark Matter : 5 x Ordinary Matter

[Youtube link](#)

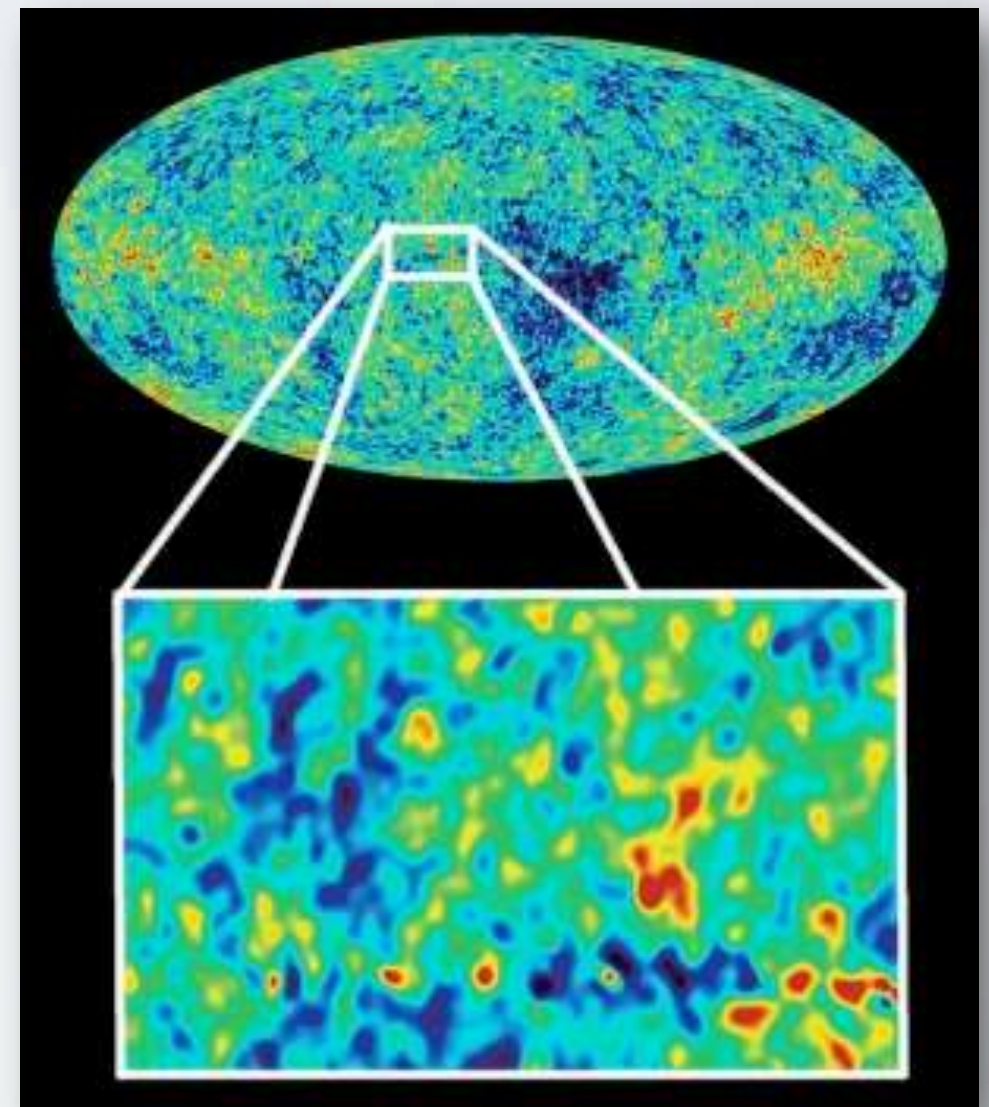
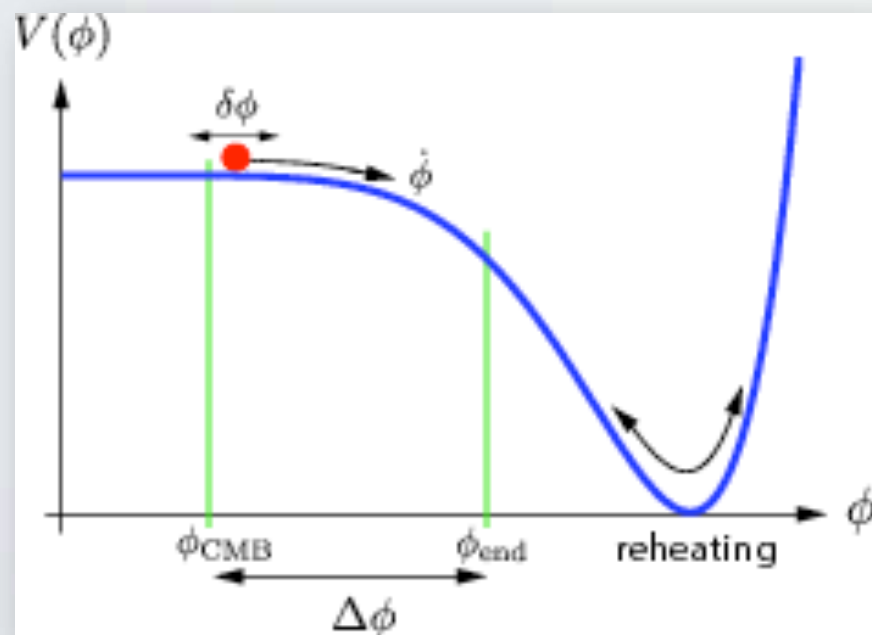
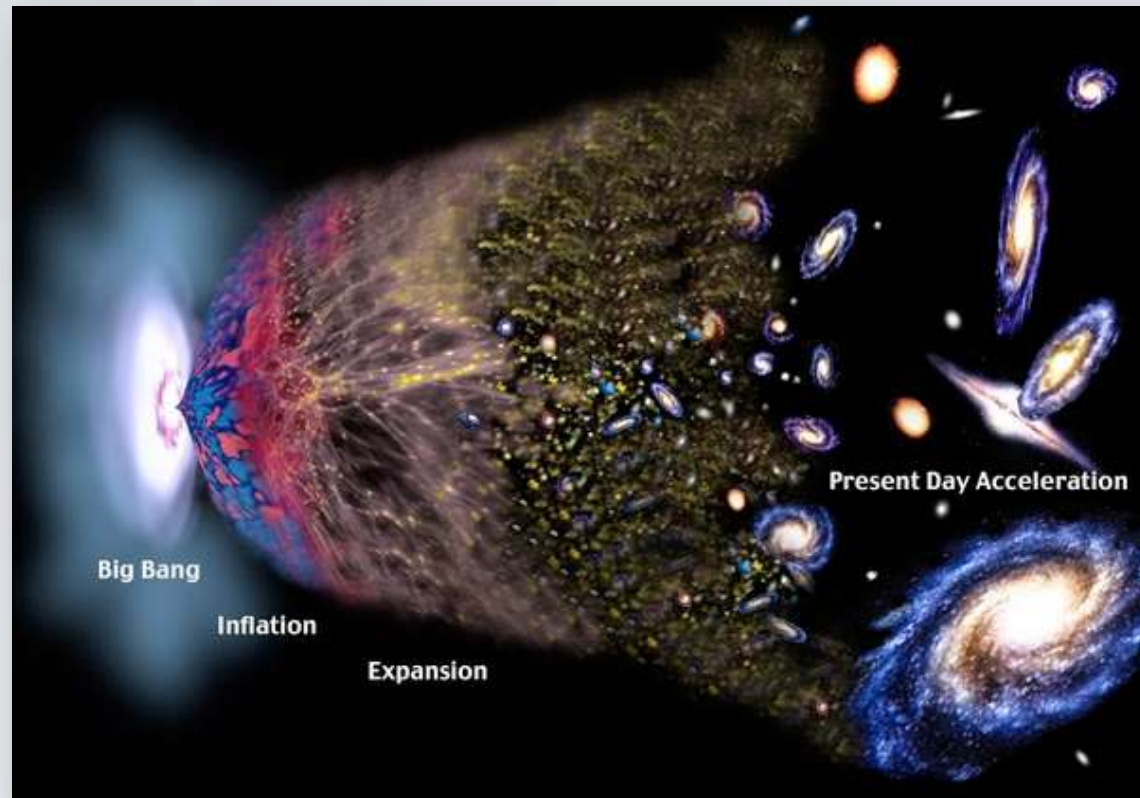
HET KOSMISCHE WEB



[Youtube](#)
[link](#)

“THE ULTIMATE FREE LUNCH”

WIJ ZIJN
QUANTUM STOF!



Big Bang

?

quantum-gravity era

inflation

cosmic microwave background

Big Bang plus
380 000 years

gravitational waves

light

Big Bang plus
14 billion years

now

