Obsew. support for Hot Big-Bang scenario

- Hubble expansion

$$H(t)\Big|_{t=t_0} = \frac{\dot{a}(t)}{a(t)}\Big|_{t=t_0} \equiv H_0 > 0$$

- Element abundance

Hydrogen	75%	primordial nucleosynthesis
Helium	24%	
Other	1%	

- Cosmic microwave background (CMB)

photons once in thermal equilibrium with charges further decoupled and formed thermal background radiation of $T = 2{,}7\,^{\circ}K$ (blackbody)

- Imprint of information in CMB

$$\frac{\delta T}{T} \sim \frac{\delta \rho}{\rho} \sim 10^{-5}$$

temperature fluctuations — density fluctuations

spherical harmonics decomposition

$$\frac{\delta T}{T} = \sum_{l,m} a_{lm} Y_{lm}(\theta, \phi)$$

power spectrum of fluctuations

$$C_l = \langle |a_{lm}|^2 \rangle$$

peak structure related to angular scale in the sky

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