



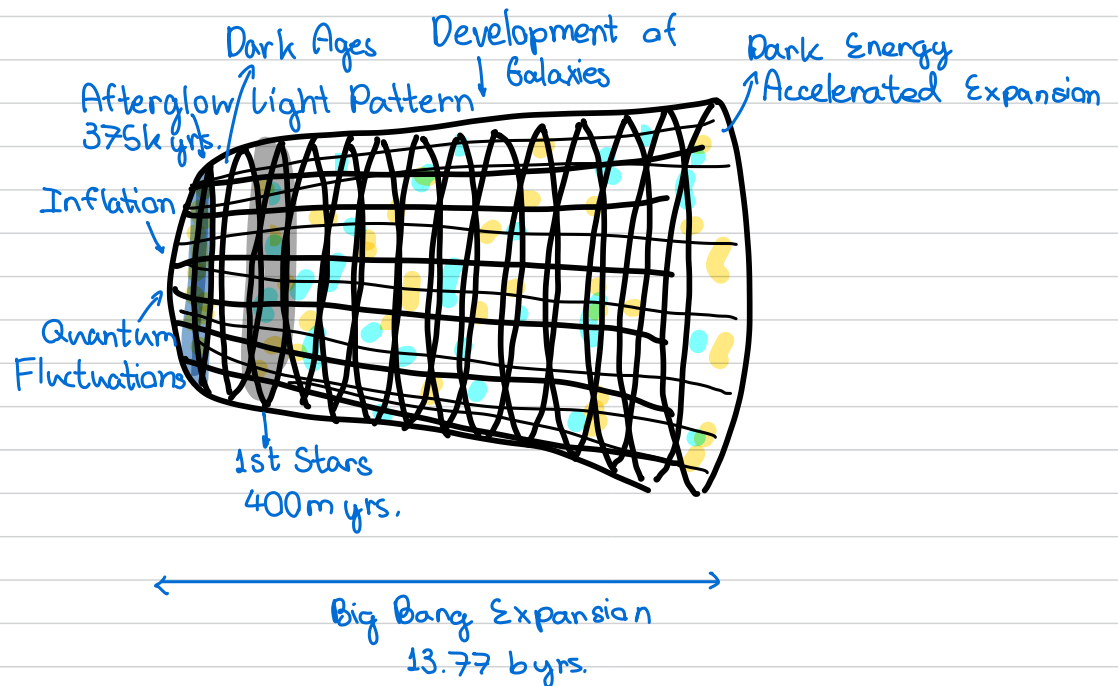
**ASTRONOMY I**  
**LECT. NATTARIKA**  
**RODSATIC**

## Books in Use

- โลกและอวกาศ 5
- โลกและอวกาศ 6
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## Universe

- everything in space that we know about.
- there is only one universe
- made up of billions of galaxies



Putting it all together

Solar System ∈ Galaxy ∈ Universe

## Distance

AU : astronomical unit

↳ ⊕ → ☉

↳ measure planets in solar system.

↳ ~ 150 m km

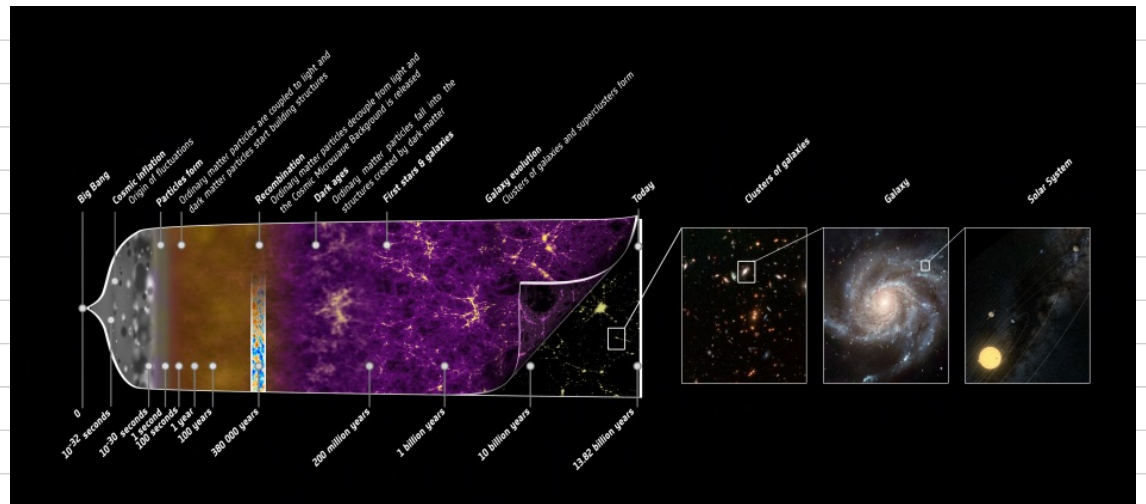
Light year

↳ light travel in one year

↳ 9 m<sup>2</sup> yrs

## Big Bang Theory

- Universe began as a single cosmic explosion 15 byrs ago.
- 1964 Penzias and Wilson discovered the remenant heat of the big bang: cosmic microwave background radiation.
- 3 degrees (k) above absolute zero.
- all matters  $\lim_{x \rightarrow 0}$  created from an expansion of a single point



## Cosmic Background Explorer (COBE Satellite)

- Before correction of Earth movement around the sun.
- Before correction of the microwave radiation emission by our galaxy
- Final image of microwave radiation.