

## Cosmological principle:

" Universe is uniform on the grandest scales and isotropic "

## Distance ladder

1) Radar etc.  $\rightarrow$  solar system distances  $\rightarrow$  I.A.U.

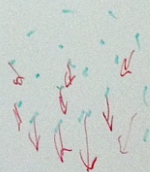
2) annual parallax  $\rightarrow$  1 pc ... 1 kpc

secular parallax:  $\vec{v}_{sun}$  (rel. to galaxy)

3) Open star cluster (Hyades)  
 $\rightarrow$  calibrate H-R diagram

4) Cepheids

5) SNIa



stars

galaxies

galaxy groups

galaxy clusters

Super-cluster

(LOCAL Group)

$$\tan \mu = \frac{V_{trans}}{V_{rad}} \leftarrow \text{absolute} \rightarrow \mu$$

$V_{rad} \leftarrow \text{Doppler}$