The Cosmic Distance Ladder

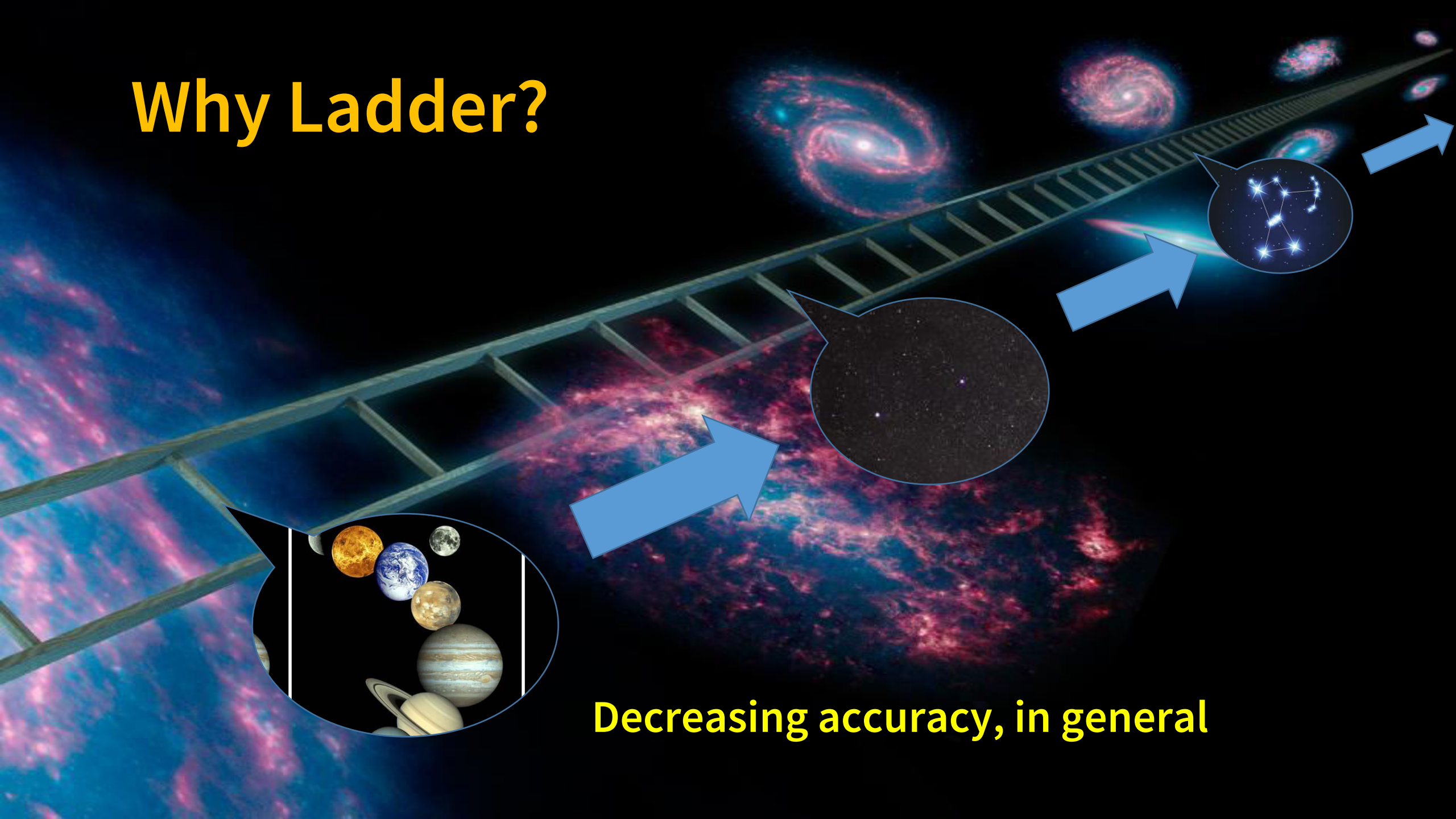
Where it takes us and how

Alankar Kotwal

Distances in Astronomy are BIG!

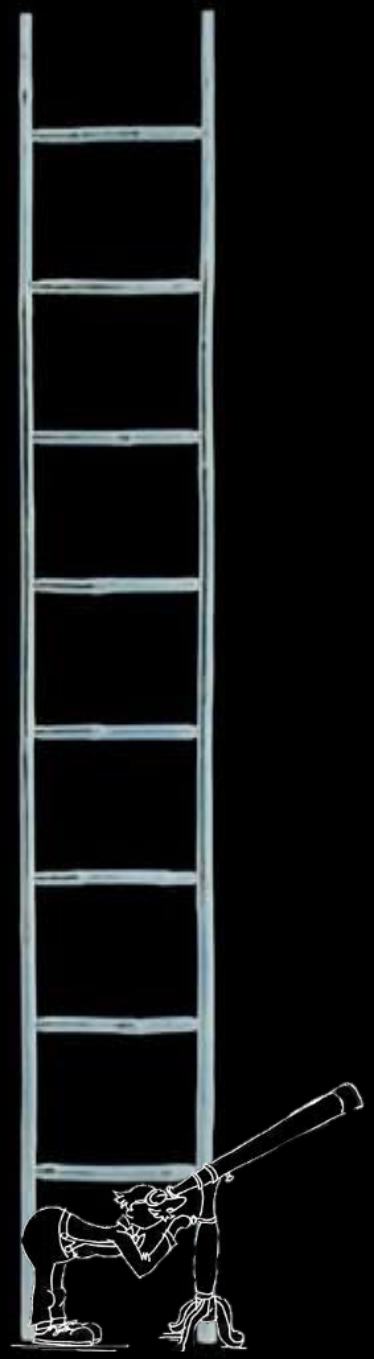
Distances measured by their effects, not by a ruler!

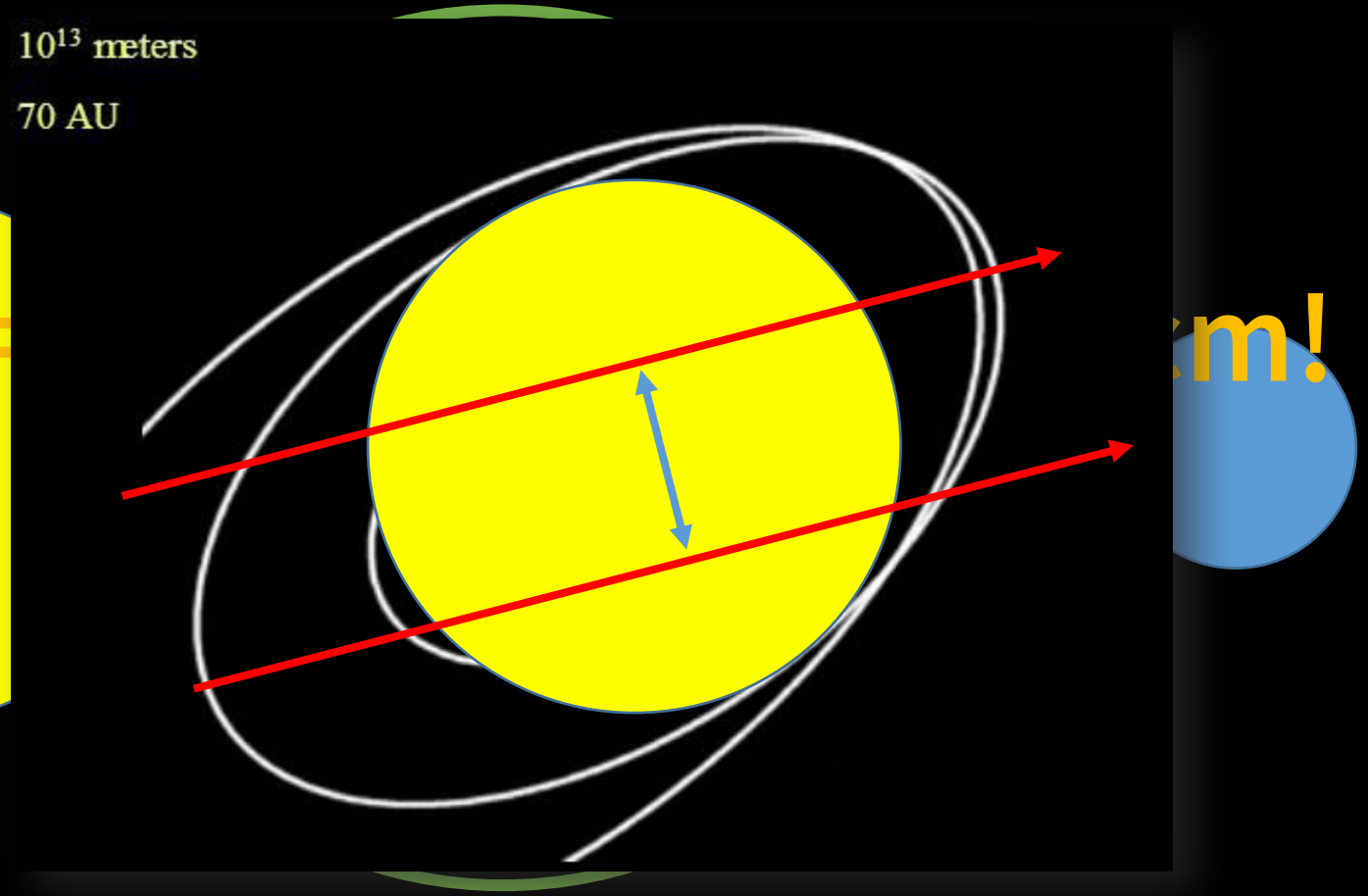
Why Ladder?



Decreasing accuracy, in general

Direct Measurement

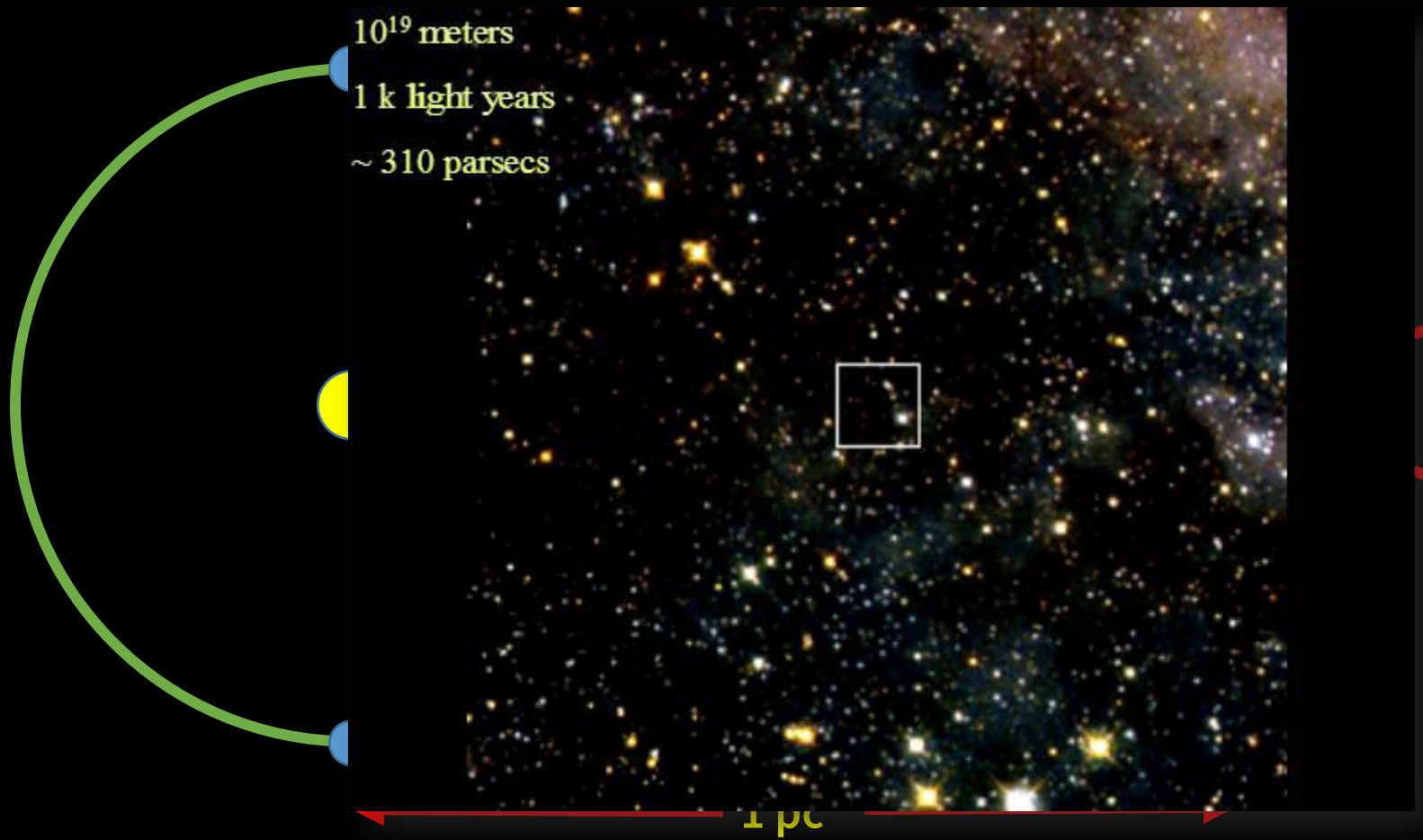


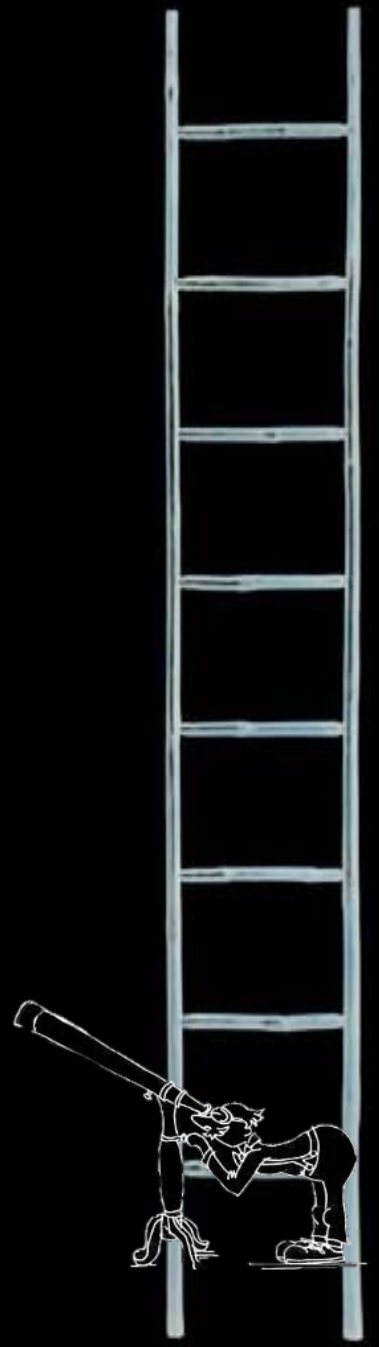


Radar =

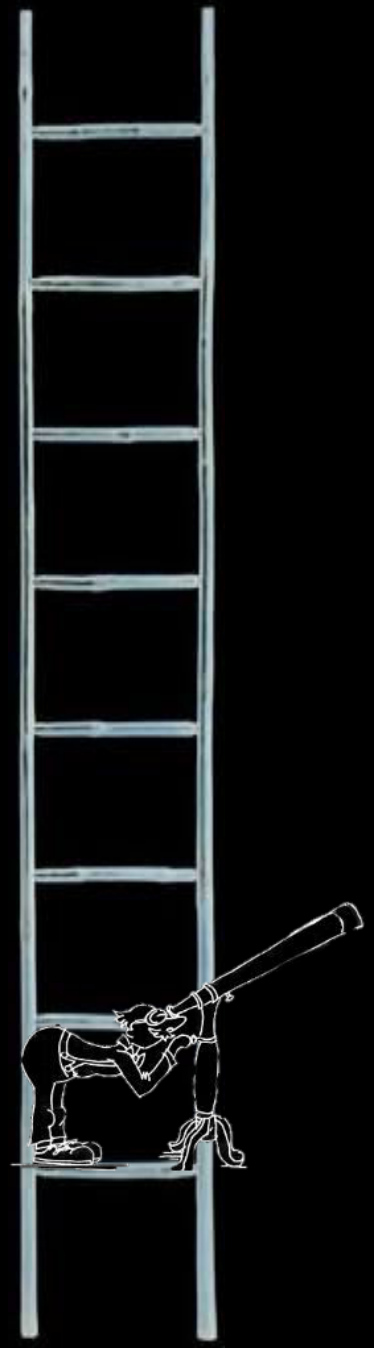
m!

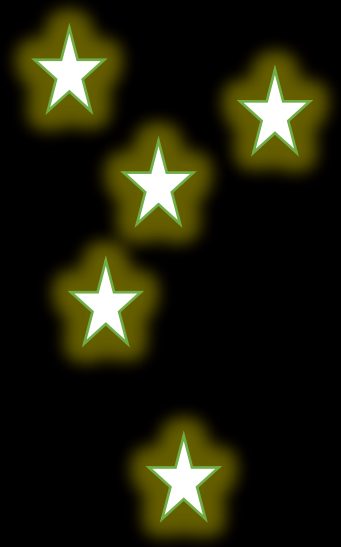
Beyond the Solar System

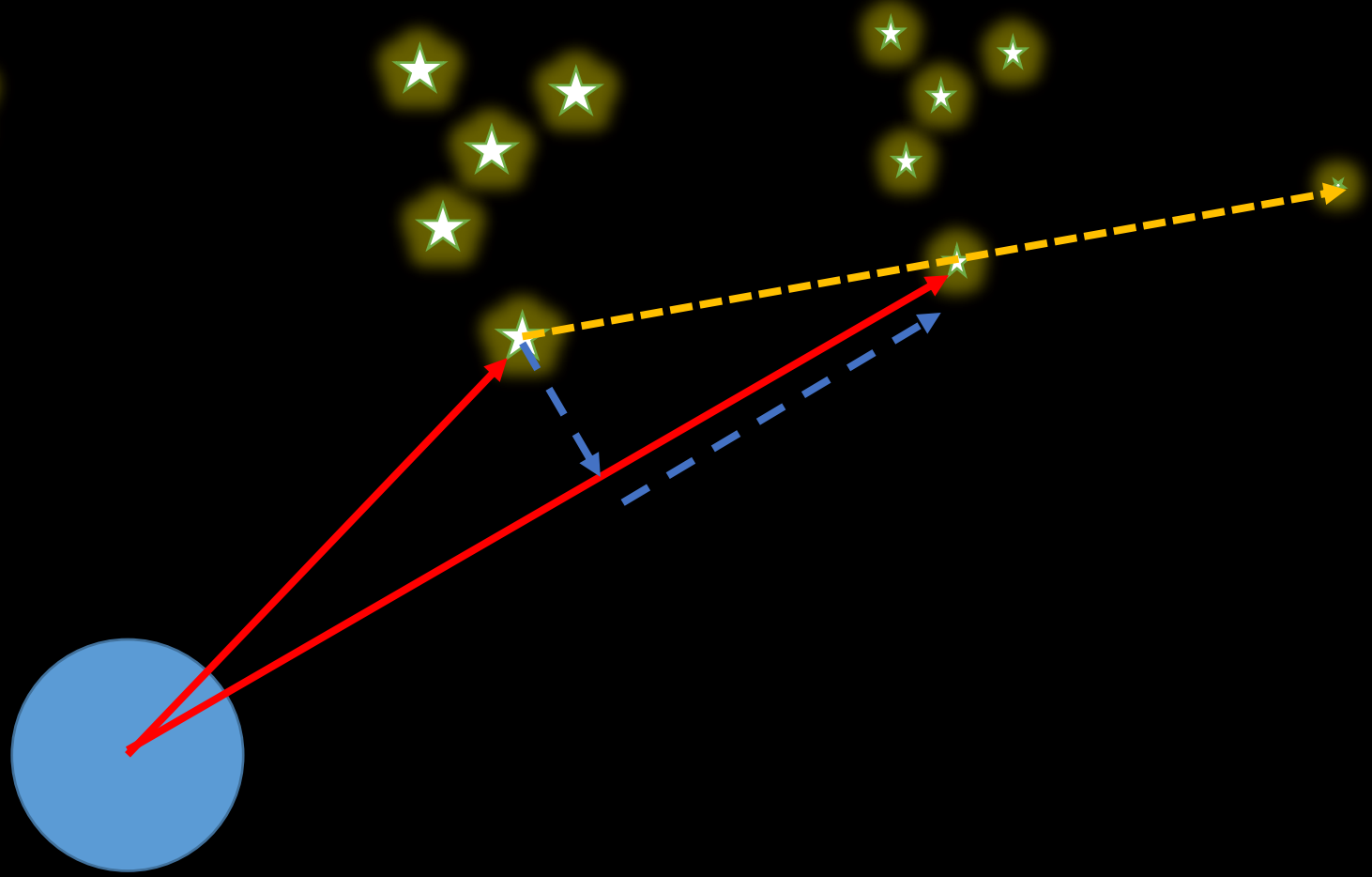




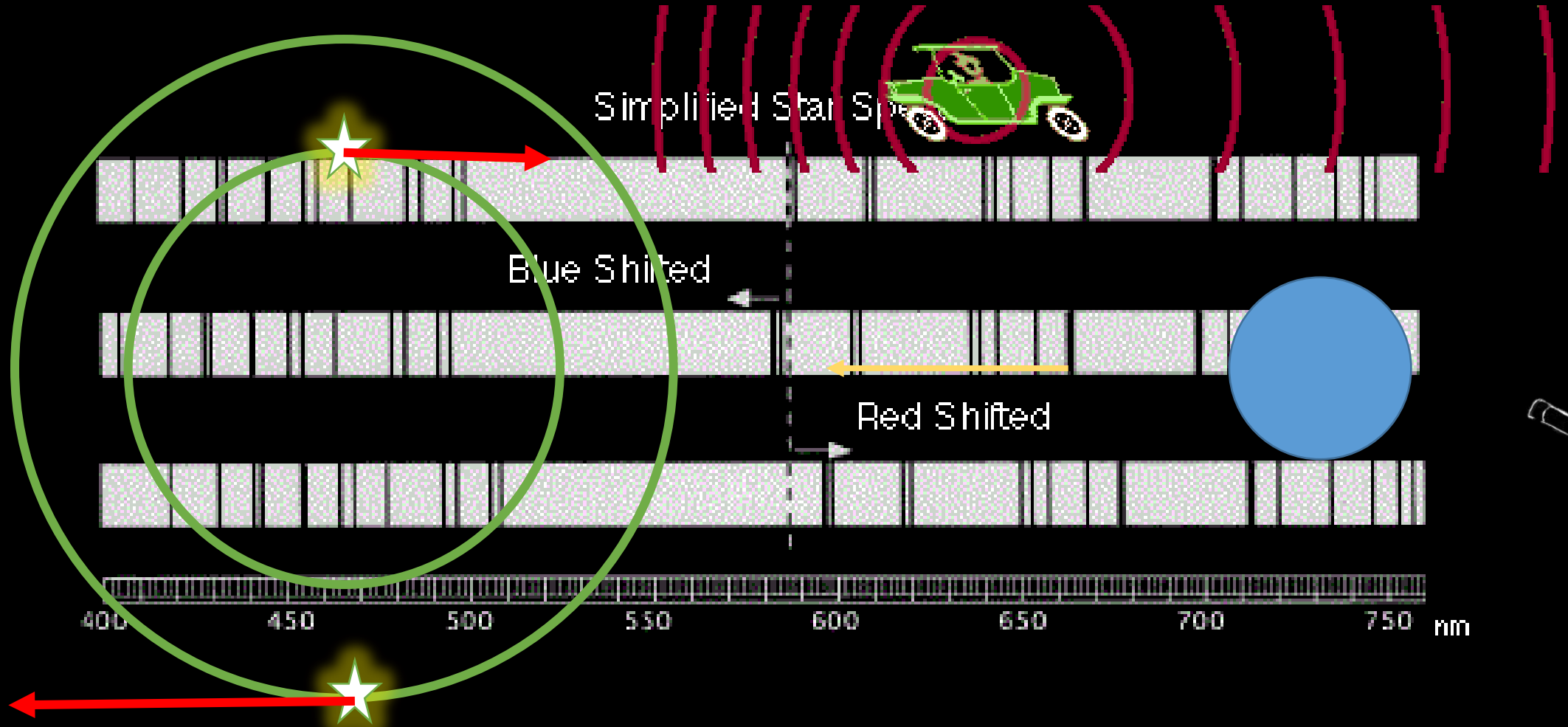
Moving Clusters

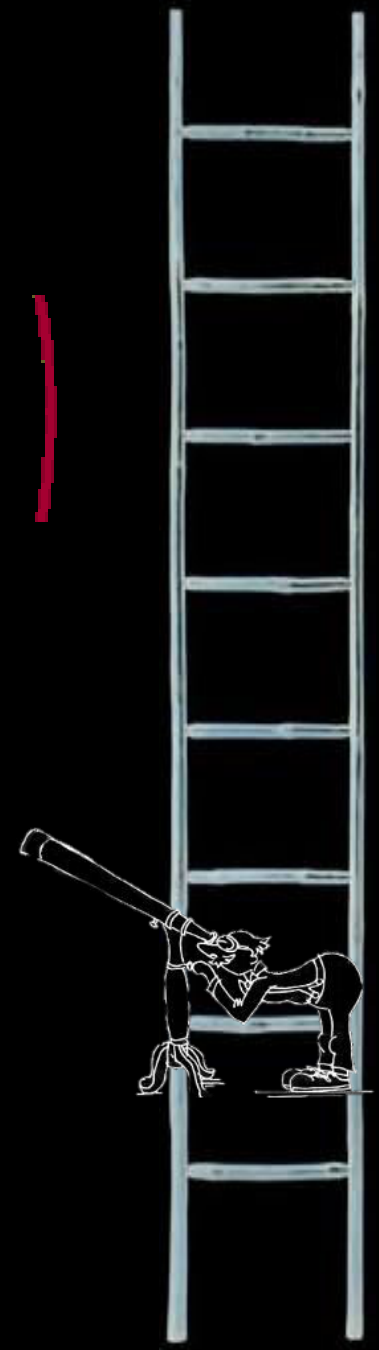




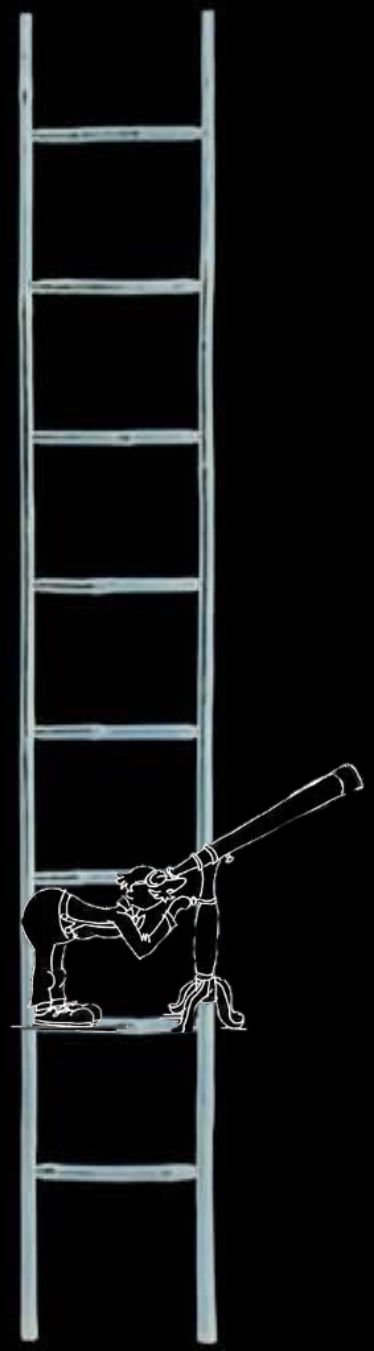


Far beyond

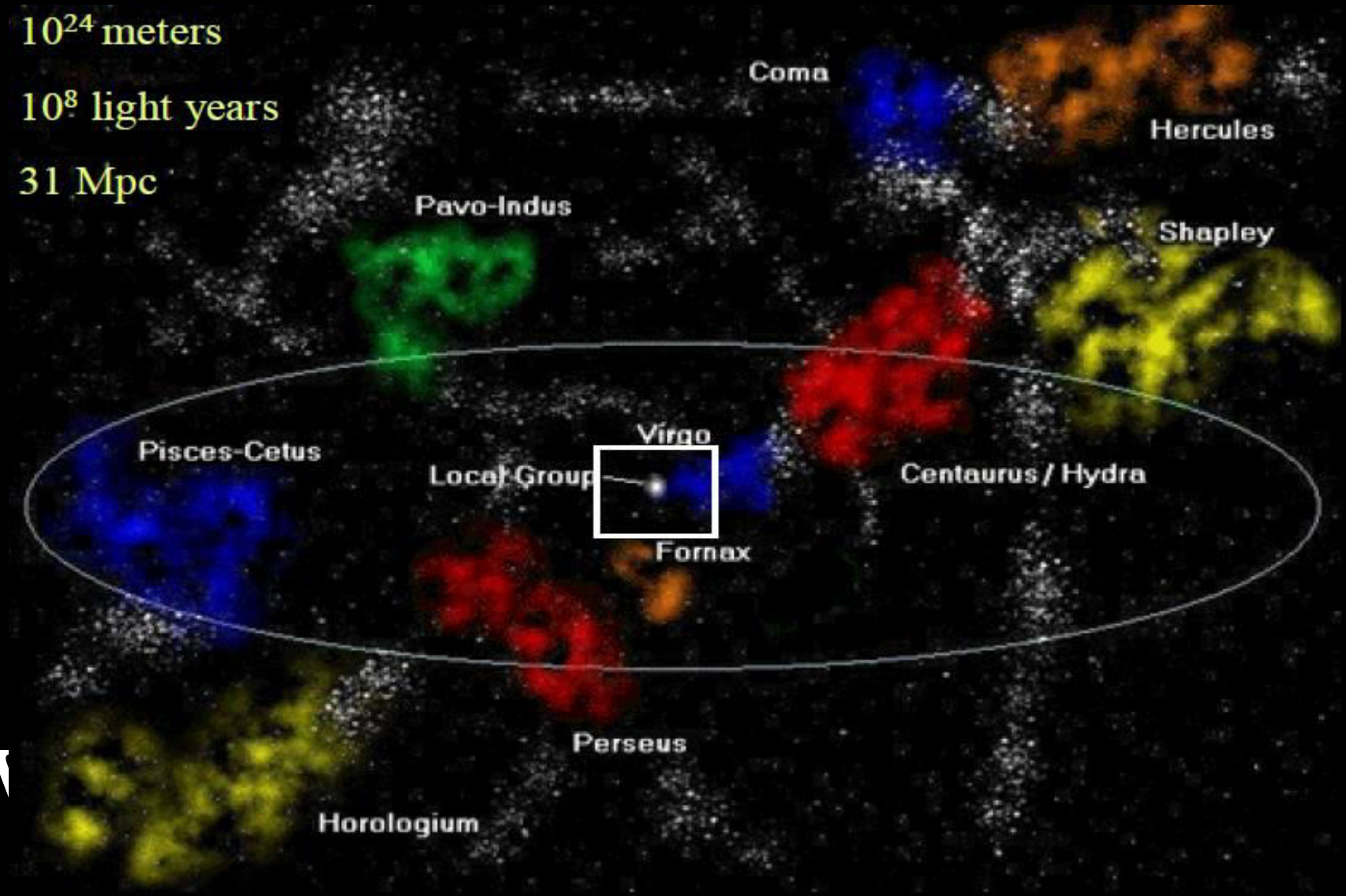


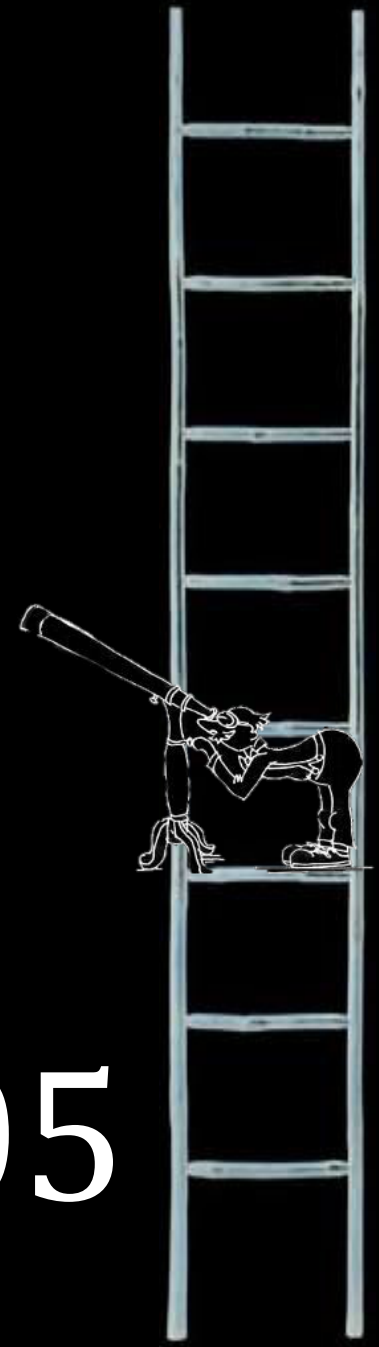


Let there be some light



What next?





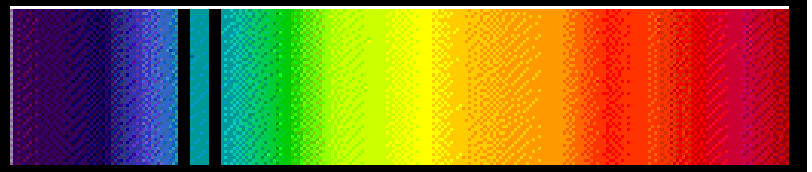
$M_{\odot}$

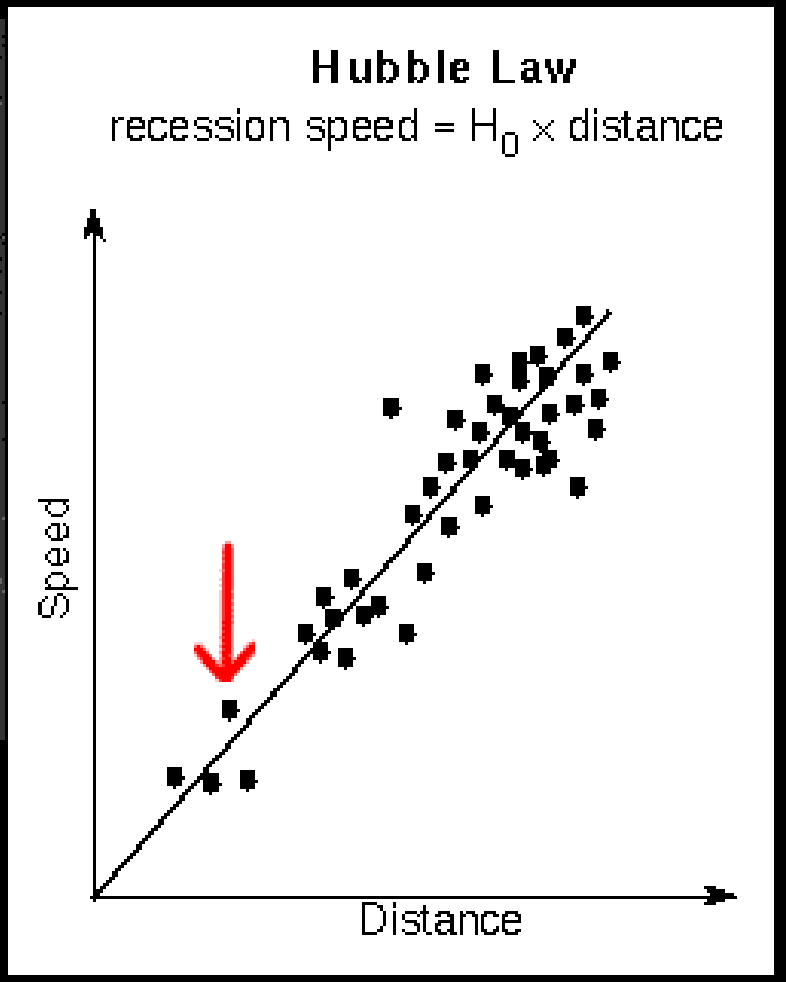
.05

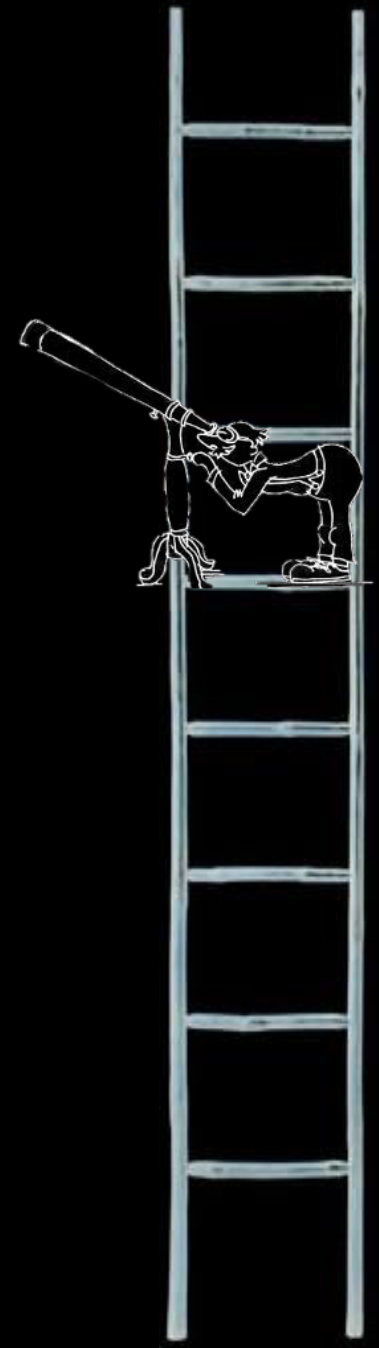
Supernovae!

Credits: Saul Perlmutter: Supernovae, Dark Energy, and the Accelerating Universe
http://supernova.lbl.gov/PDFs/PhysicsTodayArticle.pdf

Extreme Distances

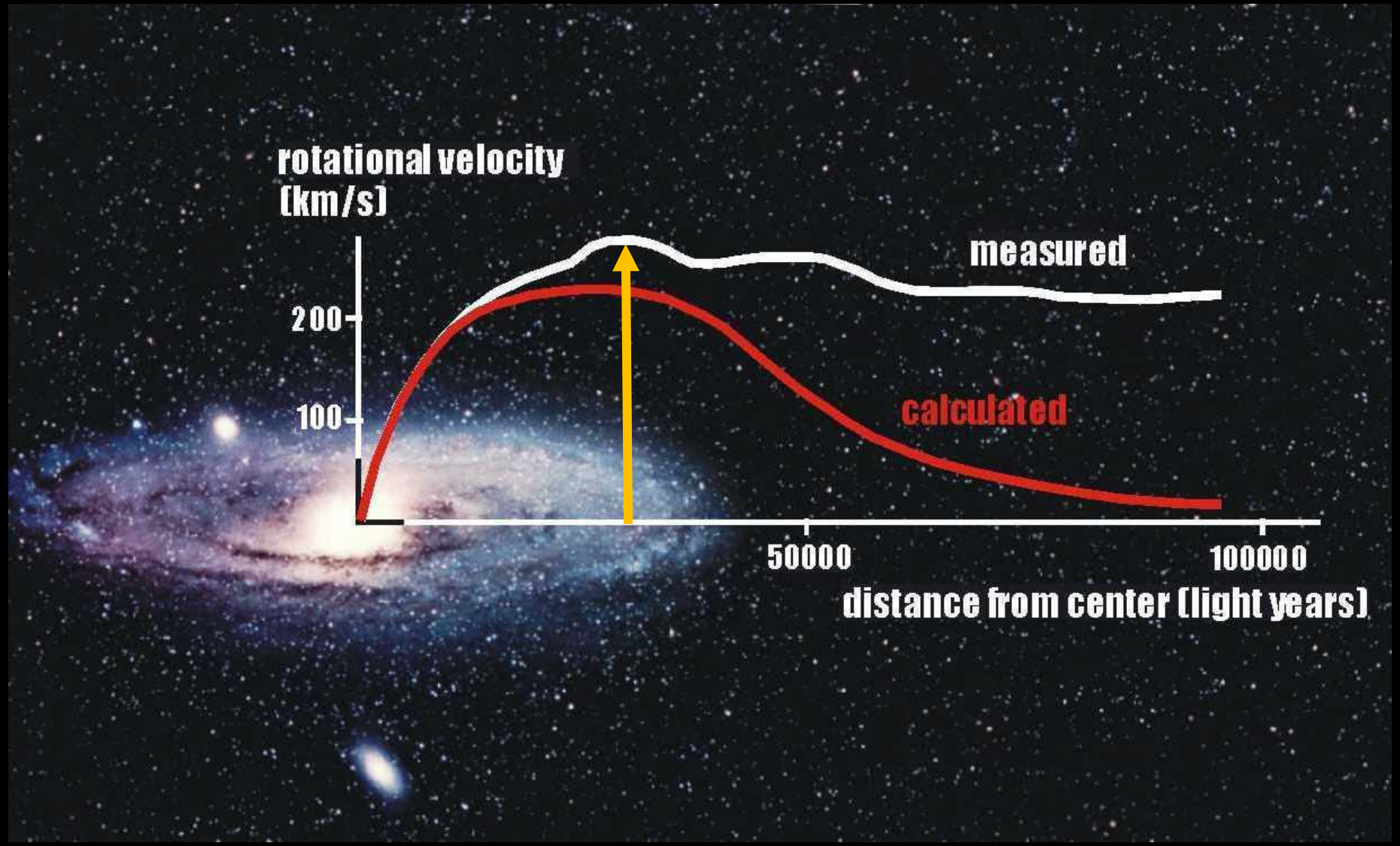


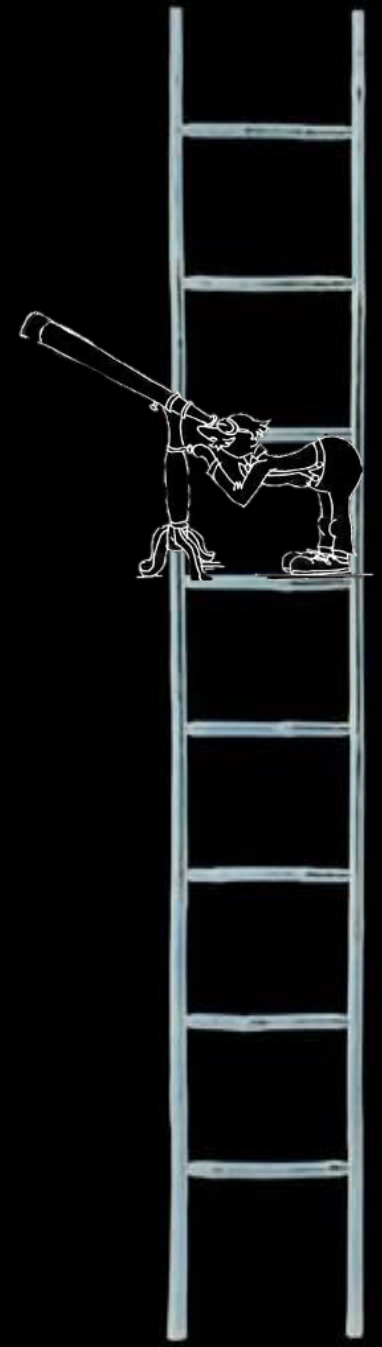




Credits: http://astro.wku.edu/astr106/Hubble_intro.html

Rotation Curves





Astronomers are always coming up with new ways of measuring distances

Questions?

NO aliens, UFOs or God please! ☺