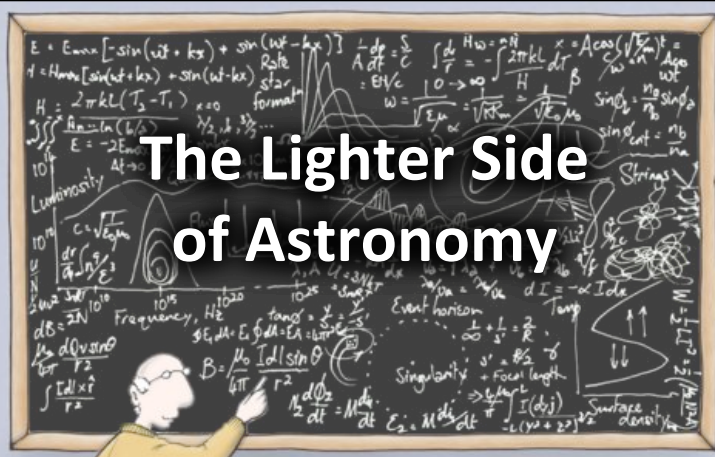


The Lighter Side of Astronomy



The Lighter Side of Astronomy

Dr Steve Barrett NWU3A SS 29 Aug 2019

The Lighter Side of ...

Astronomers
Telescopes
Catching Starlight
Telescopes
Observatories

Milky Way in a Dark Sky



Aurora Borealis



The Lighter Side of Astronomy



Safety First



The Lighter Side of ...

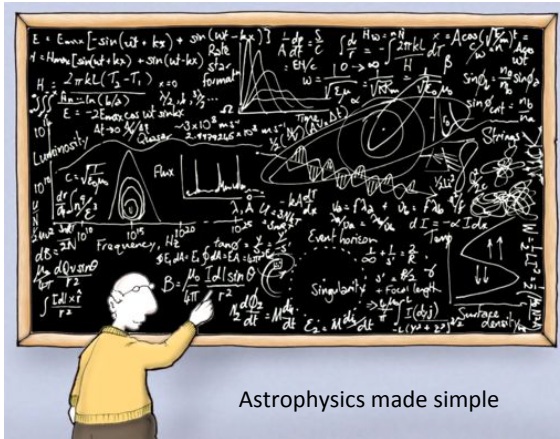
Astronomers

Some Astronomers Are ... Scientists



The Lighter Side of Astronomy

Some Astronomers Are ... Astrophysicists



Ancient Astronomers



Ancient Astronomers

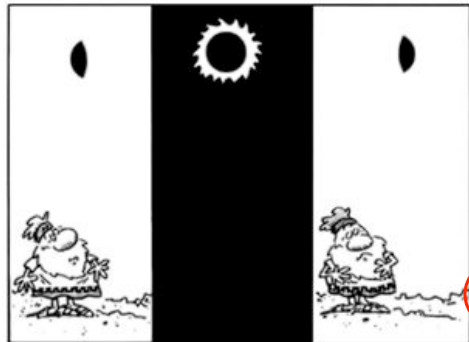


Ancient Astronomers



The Lighter Side of Astronomy

Ancient Astronomers



It happened right after the eclipse...
It just keeps blinking twelve o'clock!

Sundial Repair

Wizard Astronomer

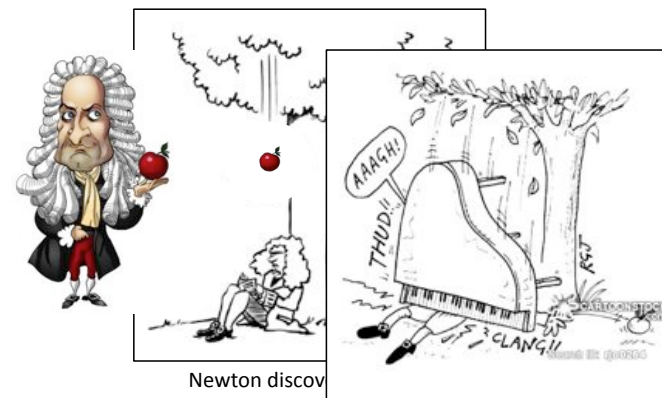


Galileo



If there were computers
in Galileo's time

Newton

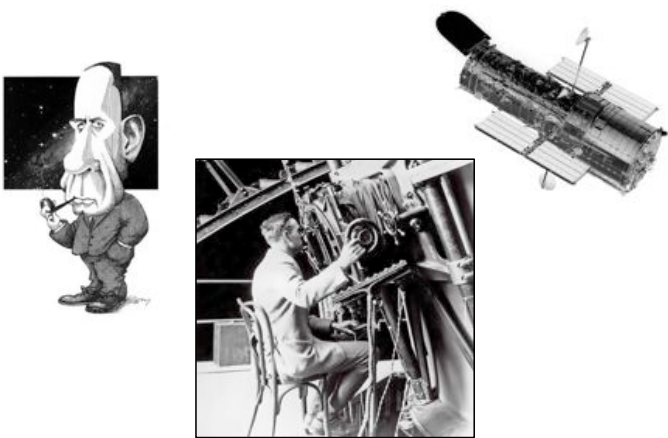


Newton discovers

Newton discovers surrealism

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Hubble

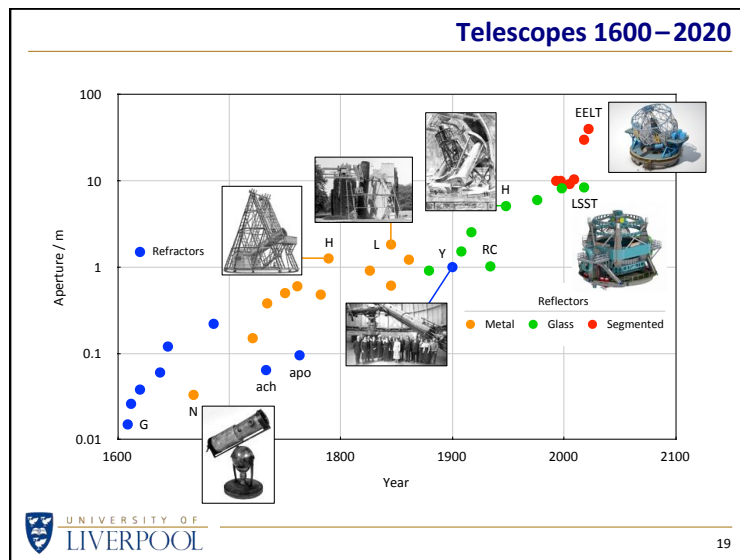


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The Lighter Side of ...

Telescopes

18



Telescopes 1600–2020

On the previous slide the following abbreviations are used:

G	Galileo's refracting telescope	< 1" lens
N	Newton's reflecting telescope	> 1" mirror
ach	First achromatic lens	2" lens
apo	First apochromatic lens	4" lens
H	Herschel's 40 foot telescope	47" mirror
L	Leviathan of Parsonstown	72" mirror
Y	Yerkes 40" refractor	40" lens
RC	Ritchey-Chrétien telescope	24" mirror
H	Hale 200" reflector	5m mirror
LSST	Large Synoptic Survey Telescope	8m mirror
EELT	European Extremely Large Telescope	40m mirror

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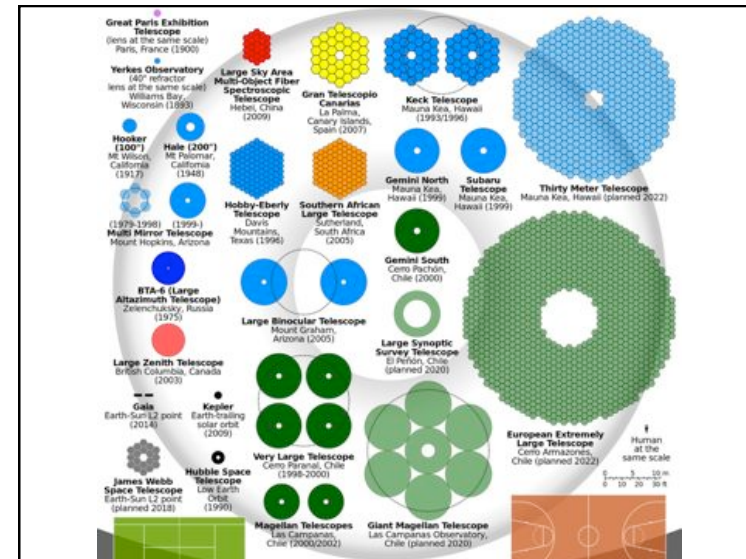
The Lighter Side of Astronomy

Hevelius' Telescopes

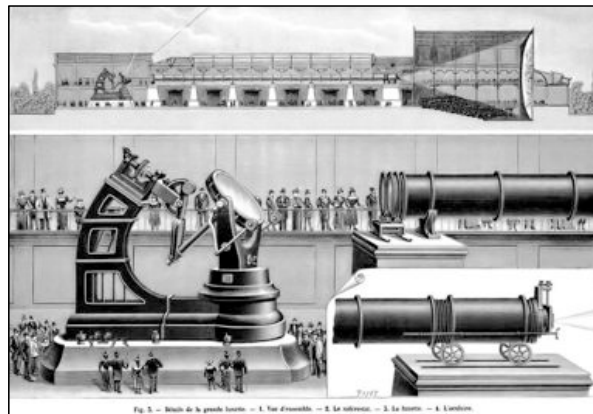


Hevelius
said it was
"Easy to use"

Halley
said it was
"Useless"



Great Paris Exhibition Telescope



Great Paris Exhibition Telescope



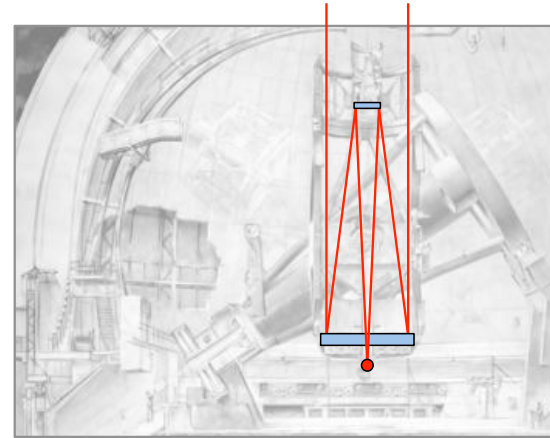
Eye-piece holder

The Lighter Side of Astronomy

Hale 200" Telescope



Catching the Light



Astronomy From On High



... Or Higher

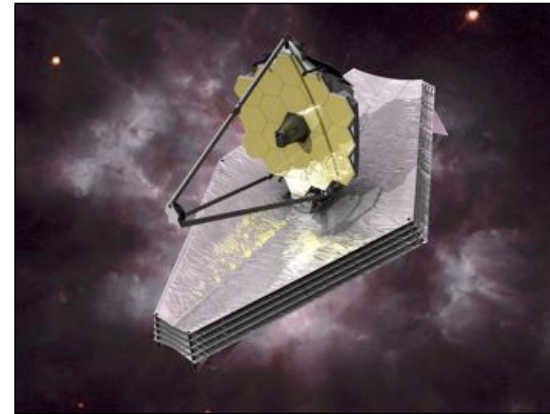


The Lighter Side of Astronomy

Hubble Space Telescope



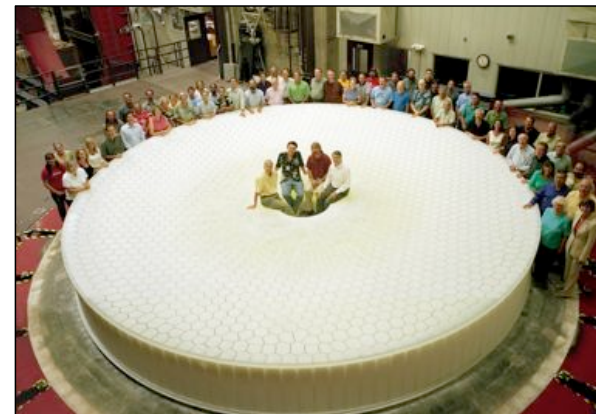
James Webb Space Telescope



Large Synoptic Survey Telescope



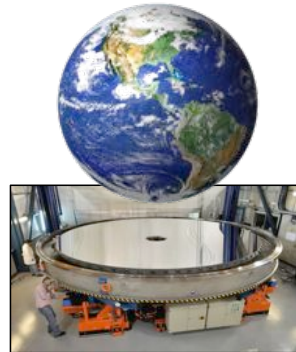
Making a Telescope Mirror



The Lighter Side of Astronomy

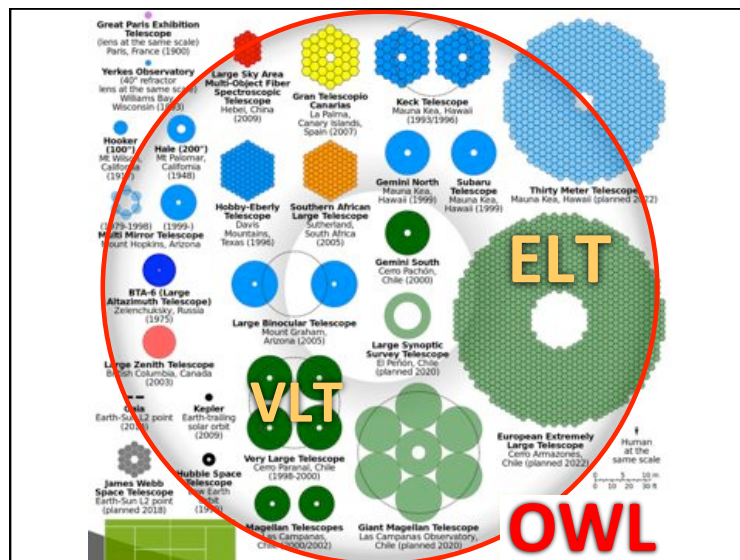
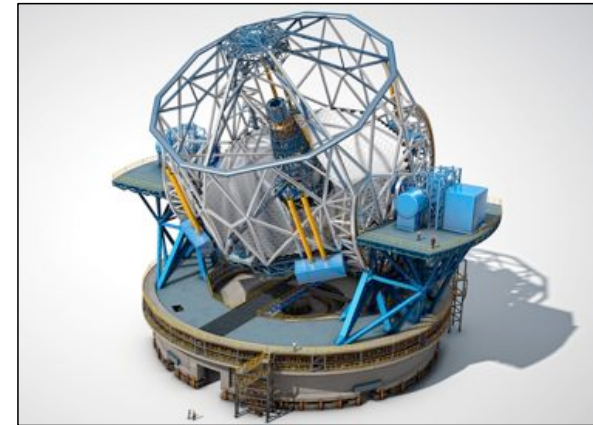
Mirror Smoothness

To visualise the degree of smoothness that can be achieved with modern computer-controlled techniques, imagine the mirror scaled up by a factor of a million until it is the size of the Earth ...



...then the deviations from the desired smooth shape would be no more than about 2 cm in height!

European Extremely Large Telescope



500m Aperture Spherical Telescope



The Lighter Side of Astronomy

The Lighter Side of ...

Catching Starlight

Star Cluster



Catching Starlight

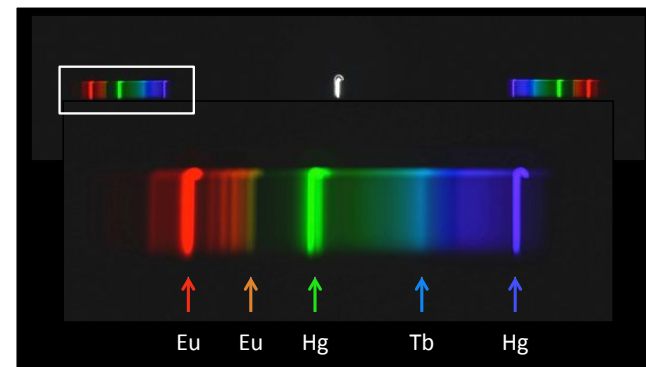


Newton's work on optics in the 1660s established that white light is composed of many colours.

Breaking starlight into its component colours allows us to determine what stars are made of.

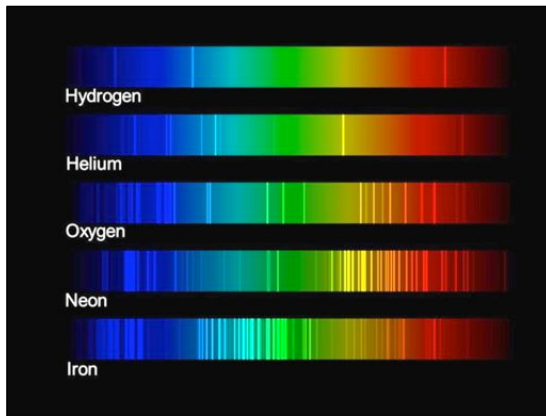
Making a Spectrum

A diffraction grating (just like a prism) can reveal the component colours in a fluorescent light bulb



The Lighter Side of Astronomy

Spectra of Elements



Pillars of Creation



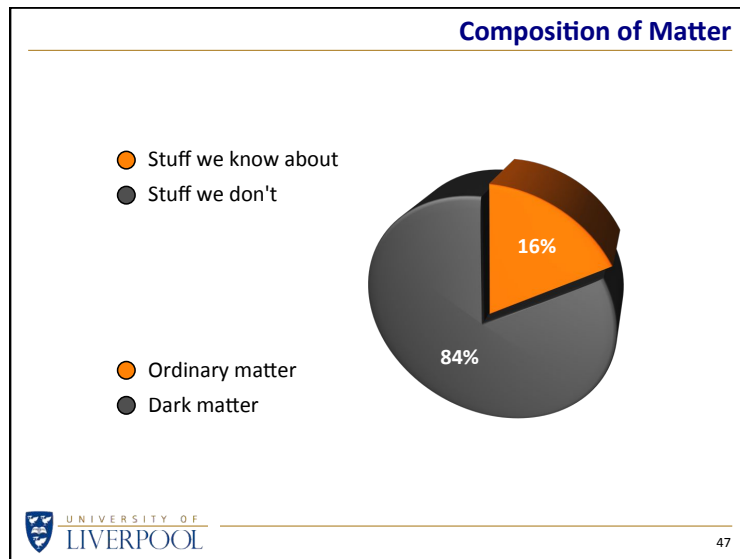
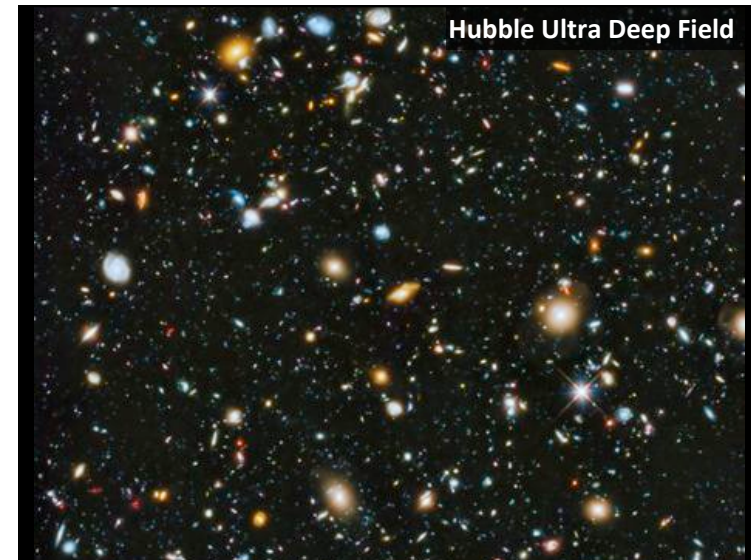
Cat's Eye Nebula



Galaxies



The Lighter Side of Astronomy



The Lighter Side of Astronomy

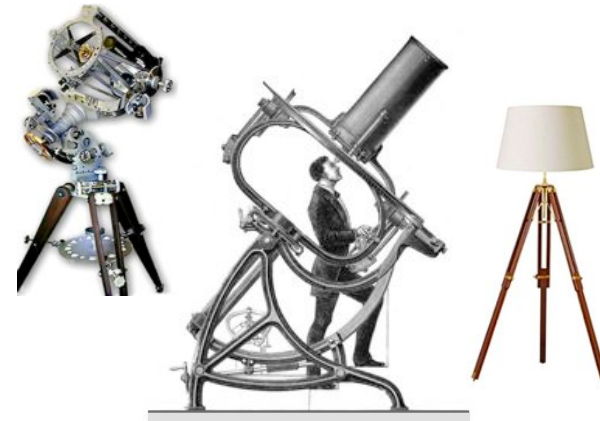
The Lighter Side of ...

Amateur Telescopes



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Making Telescopes



50

When One Is Not Enough



51

When Two Is Not Enough

So try 10? ...



... or maybe 24?



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The Lighter Side of Astronomy

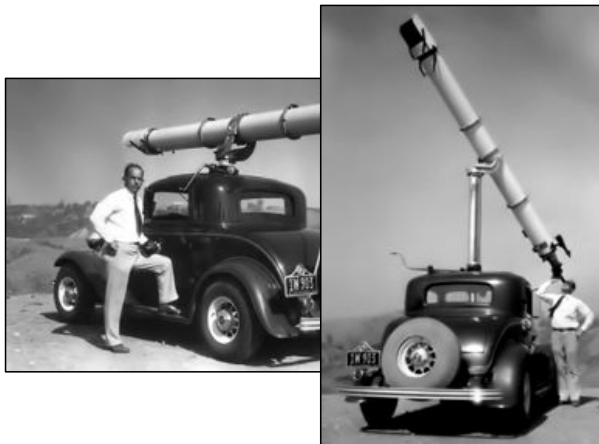
Size Matters



Astronomy On the Move



Astronomy On the Move



Tele-Volvo



The Lighter Side of Astronomy

The Lighter Side of ...

Observatories

Teide Observatory



Teide Observatory



A Week Above the Clouds



The Lighter Side of Astronomy

Star Trails



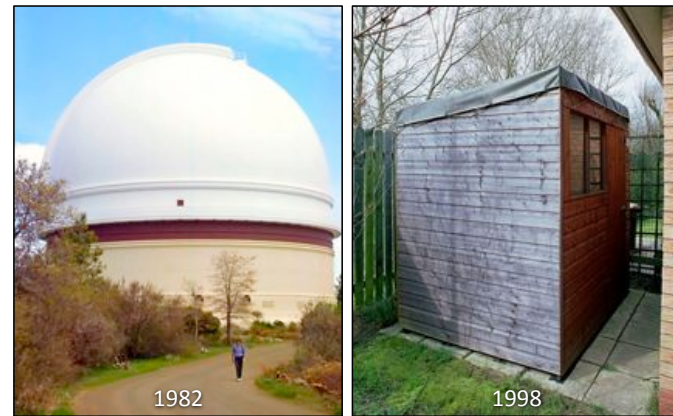
Mons Telescope



Palomar Mountain

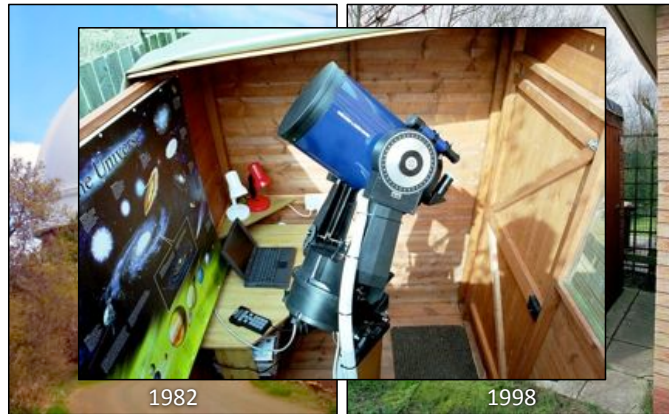


Back Garden Observatory



The Lighter Side of Astronomy

Back Garden Observatory



Craftsmanship



Astronomy On the Move



Astronomy On the Move



The Lighter Side of Astronomy

Professional Astronomy



Amateur Stargazer



Acknowledgements

Astro Bob	astrobob.areavoices.com
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Nick Kim	www.lab-initio.com
Mike Lester	www.cartoonistgroup.com
Miscellaneous	clipartfest.com
xkcd	www.xkcd.com

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www.liverpool.ac.uk/~sdb/Talks

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