

Sun and Stars



Sun and Stars



This talk is about the life of our Sun, the stars in our galaxy and the most distant galaxies in the Universe.

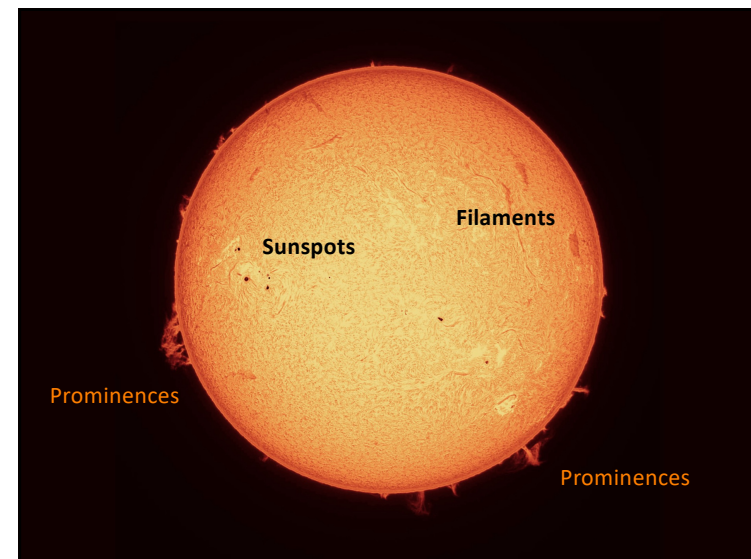
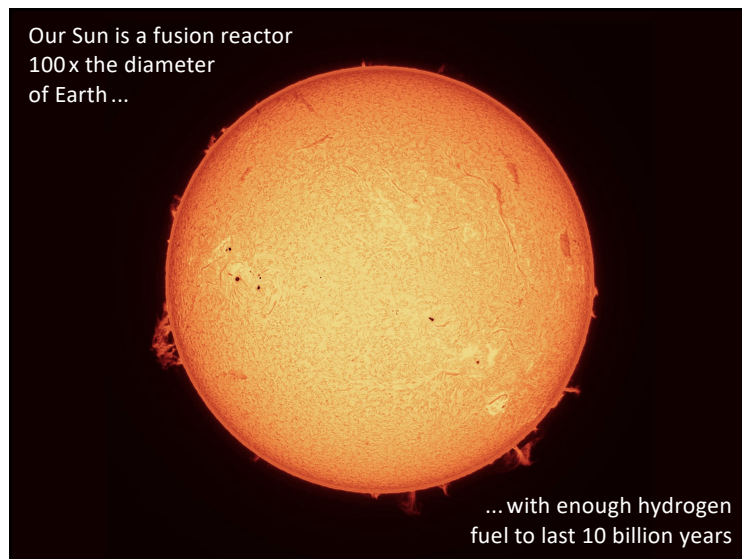


The talk is illustrated with images taken by members of Bromsgrove Astronomical Society.

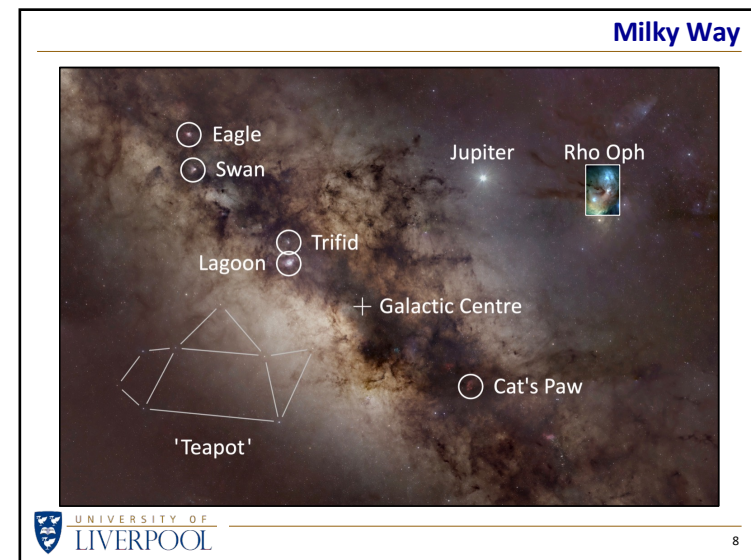
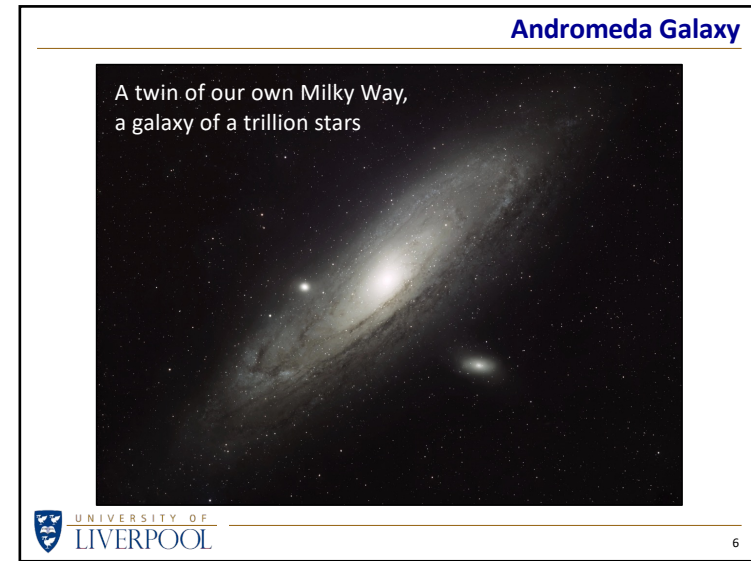
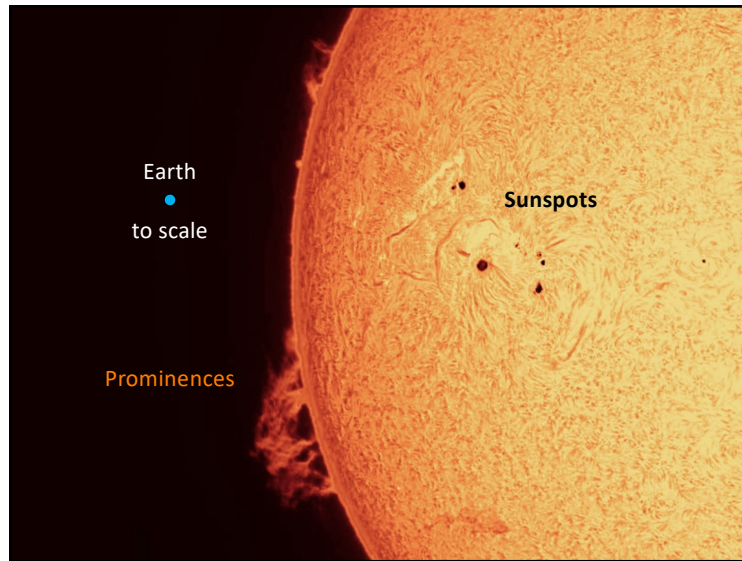
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This slide is titled 'Sun and Stars' in blue text at the top right. It contains two images: a small orange sun on the left and a spiral galaxy on the right. Text between them describes the talk's content. Below the sun image, text states that the talk is illustrated with images from the Bromsgrove Astronomical Society. The University of Liverpool logo is at the bottom left, and a small number '2' is at the bottom right.



Sun and Stars

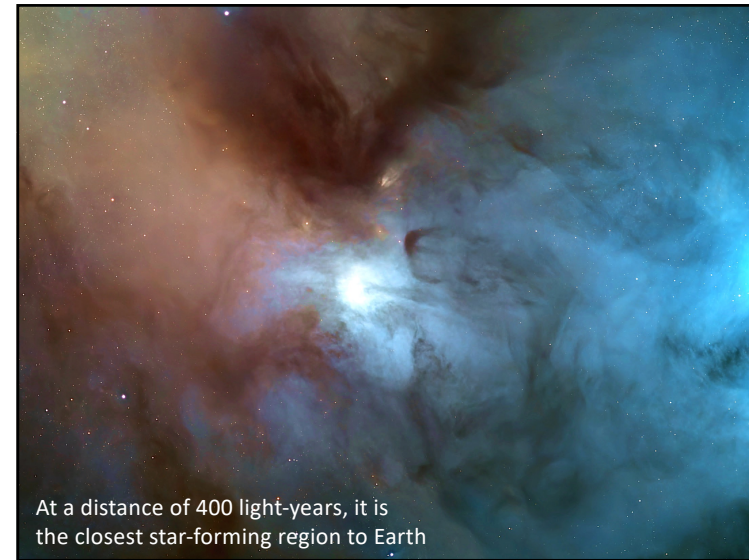


Sun and Stars

Rho Ophiuchi Star Cloud



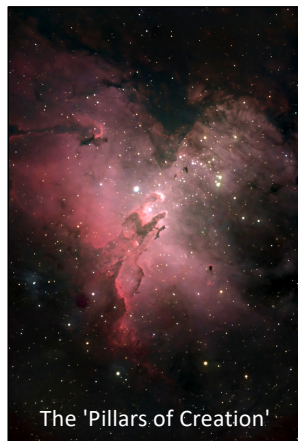
This star cloud (nebula) is a stellar nursery where stars are being born



At a distance of 400 light-years, it is the closest star-forming region to Earth

Eagle Nebula

Trifid Nebula



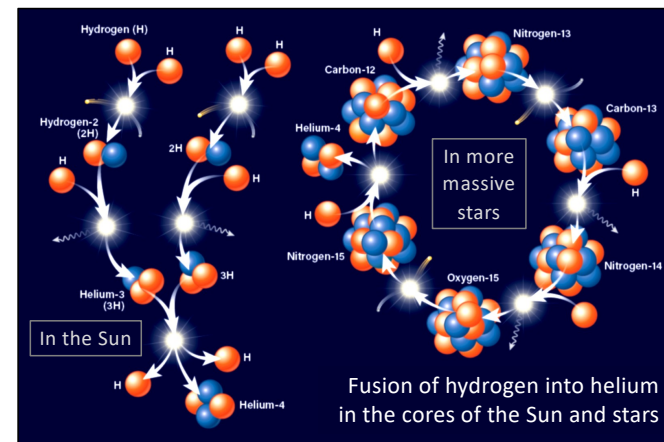
The 'Pillars of Creation'



The blue colour indicates light is being scattered

The pink colour indicates emission from hydrogen

Fusion In Stars



Sun and Stars

Fusion In Stars

Hydrogen (H)

Every second in the core of our Sun 620 million tons of H is fused into 616 million tons of He.

The 4 million tons that is 'lost' is converted from mass to energy.

In the Sun

Helium-4

Fusion of hydrogen into helium in the cores of the Sun and stars

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Helix Nebula

Veil Nebula

The Helix Nebula formed after a star like our Sun ran out of its hydrogen fuel and shrugged off its outer layers, leaving behind a white dwarf star

Massive stars might end their lives in a supernova explosion

... leaving behind a neutron star or black hole

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Supermassive Black Holes

SMBHs lurk at the centres of every galaxy

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Quasar

What is the most distant galaxy that I can image?
(without using a telescope)

Not this (nearby) star

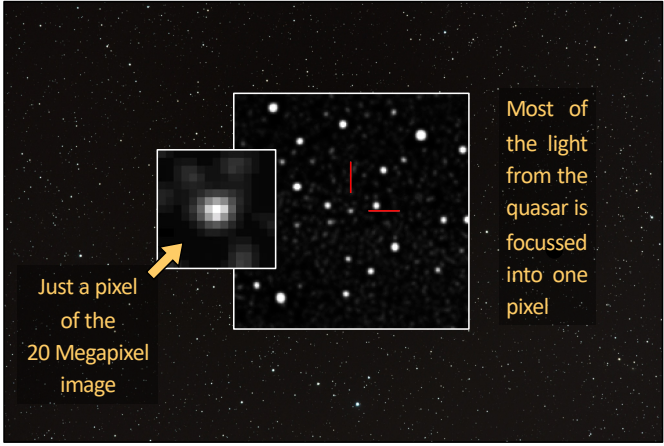
A quasar (a galaxy with an active SMBH at its centre) should be here

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Quasar



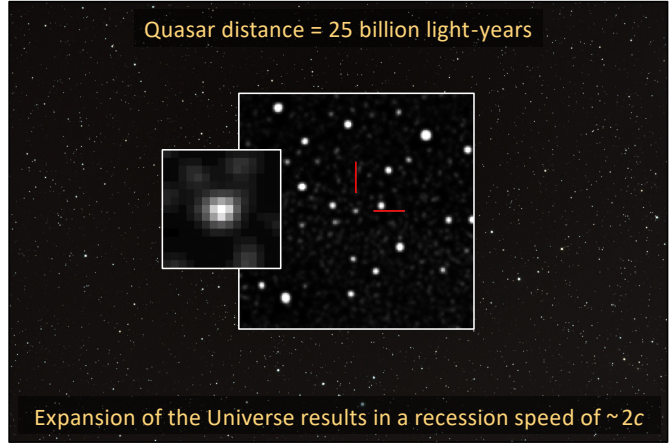
Just a pixel of the 20 Megapixel image

Most of the light from the quasar is focussed into one pixel

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Quasar



Quasar distance = 25 billion light-years

Expansion of the Universe results in a recession speed of $\sim 2c$

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Epilogue

There's a lot of Universe out there for you to explore ...

...and you can do a surprising amount from your back garden even if you don't have expensive equipment.

Why don't you give it a go?

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



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Dr Steve Barrett

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