

Astronomy Talk 8th November 2022

Telescopes: the next Generation

Prof Mike Merrifield from U of Nottingham gave this Zoom talk. There were 67 attendees. First, he went through some of the history of telescopes from Galileo onwards, showing how technology and astronomy advance hand in hand.

The popular view is of making things bigger, but really it's about sharpness of image and maximising signal. In radio astronomy use of interferometry has enormously increased resolving power.

With optical telescopes the big problem is the atmosphere, for which there are 2 solutions: go into space, e.g. JWST, or use adaptive optics. Mike talked at some length about how big telescopes use artificial stars to enable them to mitigate atmospheric effects, adjusting the mirrors hundreds of times a second.

For the future we looked at the planned ESO ELT (Extremely large telescope), with a 39-metre diameter: a prodigious piece of engineering. It's big enough that different parts of the telescope are affected differently by the atmosphere, so multiple artificial stars are used. Hopefully, it will be used to study exo-planetary atmospheres amongst other targets.

Other big telescopes planned include the Giant Magellan telescope (GMT) with a 25.4 metre diameter in Chile, and the Thirty meter telescope (TMT) in Hawaii.

After the talk Bob Mizon gave us a view of what to look for this month, and Kate Earl gave a talk on Halloween and Bonfire night astronomy treats.