Lodge Talks Program

10:30am--Fred Watson:More than a Big White Dome

This year sees Australia's largest optical telescope celebrate the 50th anniversary of its opening in October 1974 by HM King Charles III, then Prince of Wales. Jointly owned and operated by the Australian and British Governments, the 3.9-m Anglo-Australian Telescope made an immediate impact on optical astronomy by being the first telescope of its size to work entirely under computer control. Several exciting decades of discovery and innovation followed, maintaining the telescope in the forefront of astronomical research. That is a position it still occupies in the field of spectroscopic surveys. In this entertaining and copiously illustrated talk, the telescope's former Astronomer-in-Charge gives an overview of its history, working life and future.

11:00am--Thomas Nordlander - Anaemic stars and ancient supernovae

The oxygen we breathe, the iron in our blood and the calcium in our bones were all created in great cosmic explosions called supernovae. The oldest stars alive today contain only very small amount of iron and other supernova stuff. These anaemic stars let us peer into the distant past, and test our understanding of how ancient stars formed and how they died.

11:30am--Hilay Shah - Why and how to build galaxies

Supercomputers have made it possible to create simulated stars, planets, and galaxies inside a computer. My research involves building a satellite galaxy of the Milky Way called the Large Magellanic Cloud (LMC) moving through the outskirts of the Milky Way. This is useful as astrophysical processes act on timescales of millions of years. So, human lifetimes are not long enough to observe these interactions. Simulations allow us to fast forward or reverse back in time to see how the Milky Way might have interacted with LMC in the past and how that impacted the present state of LMC.

12:00pm--Maya Jablonska:Peering into the Abyss: How We Detect Black Holes

Black holes, objects with gravitational fields so strong that even light cannot escape them, are invisible by nature, making their detection a unique challenge. In this talk, we'll explore the methods astronomers use to learn more about these cosmic mysteries. We'll discuss the groundbreaking images of supermassive black holes captured by the Event Horizon Telescope, and how we detect black holes in binary systems through their gravitational influence and X-ray emissions. Additionally, we'll touch on the role of active galactic nuclei (AGN) as beacons of supermassive black holes and the use of gravitational microlensing to spot these fascinating objects. Discover how we make the invisible visible by peering into the heart of the universe's most enigmatic phenomena.

13:30pm--Matthew Colless - Telescopes: 100 years of evolving technology and advancing discovery

Astronomy is about exploring the universe, discovering what's out there, and using science to understand it. Our exploration is carried out with telescopes, so as telescope technology evolves, so does our understanding of the universe. Over the last hundred years, telescopes have become bigger, better and more diverse. This rapid evolution has led to a far wider and deeper picture of the cosmos we inhabit. In this talk, I will highlight key advances in telescope technology over the last century and illustrate the major discoveries that have resulted from them. I will also look forward to the science that might be done with the new generation of telescopes currently under construction.

14:00pm--Jenny Jiang - Behind the Scenes: the instruments that enable astronomical observations

14:30pm--Olivia Walters - High Velocity Clouds: the giant magnets colliding with the milky way and radio wave astronomy

All around our Galaxy there are large clouds called "High Velocity Clouds", these clouds fall into the Milky Way and collide with the Galactic disk, dispersing into the interstellar medium and supplying the Milky Way with a fresh supply of gas. High Velocity Clouds are hypothesised to be protected by magnetic fields, allowing them to travel safely through the halo. We can use radio waves, the same thing that your mobile phone emits, to see how strong these magnetic fields are.