Astronomers steer Hawaii's Keck telescopes from Australia

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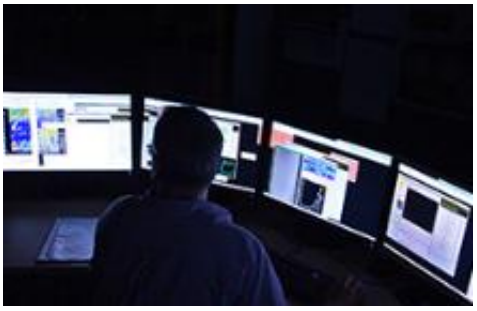

(Phys.org) —From a remote control room in the middle of Swinburne University of Technology's Hawthorn campus, astronomers have successfully steered the world's largest optical telescopes more than 9000 kilometres away at the W M Keck Observatory in Hawaii.

This is believed to be the furthest distance a telescope of this class has been routinely remotely directed in real time and the first time a university outside the US has operated either of the twin, 10-metre telescopes on the summit of Mauna Kea.

Last month Swinburne's Dr Glenn Kacprzak took control of the telescope to take spectroscopy of distant galaxies to determine how these galaxies are moving with respect to the diffuse gas surrounding them.

Dr Kacprzak used Keck II fitted with the Echellett Spectrograph and Imager (ESI) instrument to gather data that will complement his large program that uses the Cosmic Origins Spectrograph on the Hubble Space Telescope to observe the diffuse haloes around galaxies.

"The aim of these new observations is to determine how galaxies obtain and maintain their gas reservoirs, which is critical to their formation and evolution," Dr Kacprzak said.

Last year Swinburne's Centre for Astrophysics and Supercomputing renewed an agreement with the California Institute of Technology (Caltech) giving Swinburne astronomers access to the Keck Observatory for as many as 20 nights per year.

While Swinburne has had the capability to remotely acquire images and spectroscopy from the mighty Keck telescopes in real time for some years, the Director the Centre for Astrophysics and Supercomputing and University Distinguished Professor, Karl Glazebrook, described it more as 'eavesdropping'.

"Someone still had to physically be at the Keck Observatory in case the internet went down and we lost critical viewing time," Professor Glazebrook said.

"Now, with the installation of an ISDN line from Swinburne to Keck Observatory, and several other fail-safe measures, our astronomers can go fully remote and direct the telescope. If the internet goes down, there is no risk to observing as there is a dedicated line. This saves travel time and costs and the potential loss of irreplaceable observing time."

Because of the extremely high demand for time on Keck I and Keck II and the rigid scheduling, having a remote capability at Swinburne enables observations to be more compatible with astronomers'

demanding schedules.

It also enables more 'civilised' observing times, given the time zone difference between Hawthorn and Hawaii, and helps to prevent poor decision making in the wee hours of the morning after long shifts observing all night.

Over the past three years, direct access to Keck Observatory has enabled Swinburne astronomers to make discoveries such as the diamond planet, the emerald-cut galaxy, an ultra-compact dwarf galaxy, and more recently the discovery of a new supernova located in the outskirts of a galaxy some 100 million light years away.

"From a remote operations centre on campus, we have access to a portal to the Universe that enables us to learn more about what the Universe was like billions of years ago," Professor Glazebrook said.

Provided by Swinburne University of Technology