

Pulsating White Dwarfs Explained by 'Accidental Astronomer'

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(PhysOrg.com)—Exploring distant parts of the galaxy, astrophysicist Denis Sullivan has collaborated on the discovery of about six extrasolar planets—not bad for an accidental astronomer.

Next Tuesday Professor Sullivan will discuss his most recent research into some of the universe's deepest mysteries in his inaugural professorial lecture at Victoria University of Wellington, New Zealand.

"The world of modern astronomy presents a vast laboratory for investigating physical phenomena," says Professor Sullivan, who will draw on his astronomy research and teaching to give a physicist's view on life and the universe.

The lecture will focus on different aspects of his research, including extrasolar planets, and the curiously named pulsating "White Dwarfs".

White Dwarfs are the dying remnants of stars like our sun. They are slowly cooling because the energy they radiate into space in the form of photons and neutrinos from the star's surface and core is no longer replenished by internal nuclear reactions.

Using a one metre [telescope](#) at the Mt John Observatory in Lake Tekapo, Professor Sullivan has been observing White Dwarfs to study how stars evolve and die.

"Imagine something the mass of the sun (333,000 times the mass of the

earth) eventually collapsing into something the size of earth. [White Dwarfs](#) are incredibly dense, with high surface gravities, and internal matter at extremely high pressures and temperatures," he says.

As part of the NZ-Japan Microlensing Observations in Astrophysics (MOA) group, Professor Sullivan has also contributed to the discovery of six planets using a technique called gravitational microlensing.

Professor Sullivan says the title of his lecture—"The Accidental Astronomer: A Personal Tour of the World of Astrophysics"—reflects the way he has drifted into astronomy after initially pursuing electrical engineering.

Born in Sydney, he completed his PhD in nuclear physics from the Australian National University (ANU) in Canberra. In 1968 he joined the Physics Department at Victoria University and his interest in instrumentation has led to his gradual move into astronomy.

Victoria University Vice-Chancellor Professor Pat Walsh says Professor Sullivan is an outstanding researcher and teacher in the area of astrophysics.

"Professor Sullivan has been at the forefront of astronomical research in this part of the world. His work at Mt John Observatory and at Victoria University is helping to make sense of some of the universe's deepest mysteries."

Professor Walsh says Victoria's Inaugural Lecture series is an opportunity for new professors to provide family, friends, colleagues and the wider community with an insight to their specialist area of study.

"It is also an opportunity for the University to celebrate and acknowledge our valued professors."

Provided by Victoria University of Wellington

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