ANGLO-AUSTRALIAN OBSERVATORY

Helen Sim +61-(0)419-635-905
(3 January only)
hsim@aao.gov.au

MEDIA RELEASE

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AUSSIES SET TO MEASURE 'DARK ENERGY'

Australian astronomers are hot on the trail of "dark energy" — a mysterious entity that is causing the Universe to expand faster and faster — and have just released their first set of observations to astronomers worldwide.

Professor Michael Drinkwater (University of Queensland) is leading a team studying "dark energy" with the Anglo-Australian Telescope in NSW.

Their project is called WiggleZ ("wiggles") and will look at the effects of "dark energy" half-way back in the universe's lifetime.

"We're looking for a pattern in the way distant galaxies are distributed," Professor Drinkwater said.

When the galaxy distribution is plotted, the pattern will appear as a set of "wiggles", hence the name of the project.

Because light takes time to travel through the Universe, looking far out is equivalent to looking back in time, and WiggleZ is observing galaxies that existed when the Universe was half its present age.

"By observing the size of the pattern at different times in the Universe's history, we can track the history of the expansion of the Universe, and thus determine the effects of 'dark energy'," said Professor Warrick Couch of Swinburne University, a WiggleZ team member.

"Dark energy" is a hot topic in physics. More than a dozen ground-based "dark energy" projects are proposed or under way, and at least four space-based missions, each of the order of a billion dollars, are at the design concept stage.

The "wiggles" pattern in galaxies in today's Universe was discovered in 2004 by two teams, one of which had used the Anglo-Australian Telescope for its galaxy survey.

WiggleZ will measure the redshifts (distances) of 240,000 galaxies, allowing astronomers to create a 3D map of galaxies stretching over a thousand square degrees on the sky and look for a pattern in the way they are clustered on large scales.

These galaxies are about halfway back in the Universe's history (4 to 8 billion years ago, corresponding to redshifts of between 0.2 and 1).

WiggleZ started in 2006 and, when finished in 2010, will be the largest galaxy redshift survey made to that time in terms of the volume of space it covers at such remote distances in the universe.

The first WiggleZ data release, of 100,000 galaxies, is published in association with a paper in *Monthly Notices of the Royal Astronomical Society*.

More information – WiggleZ team members

Professor Michael Drinkwater, University of Queensland – WiggleZ team leader
0432 887 642 (mob)
07 3720 9168 (home)
m.drinkwater@uq.edu.au

Dr Tamara Davis, University of Queensland
0432 526 989 (mob)
tamarad@physics.uq.edu.au

Professor Warrick Couch, Swinburne University, Melbourne
0413 011 371 (mob)
wcouch@astro.swin.edu.au

Dr Sarah Brough, Anglo-Australian Observatory, Sydney
0449 505 219 (mob)
sb@aao.gov.au

Images

http://www.aao.gov.au/press/wigglez/wigglezpics/images.html

Publication

The survey paper (accepted for publication in the *Monthly Notices of the Royal Astronomical Society*): http://www.physics.uq.edu.au/people/mjd/pub/WiggleZ.pdf and http://arxiv.org/abs/0911.4246 .

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