

TAIPAN

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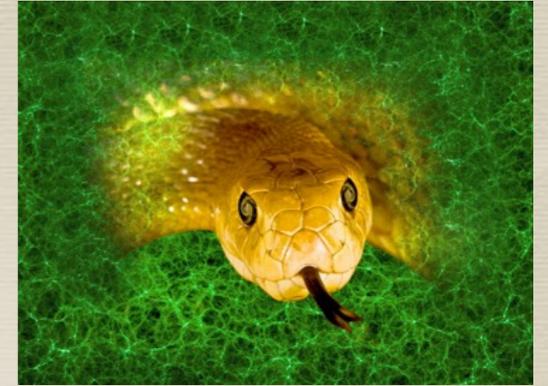


Australian Government
Department of Industry and Science





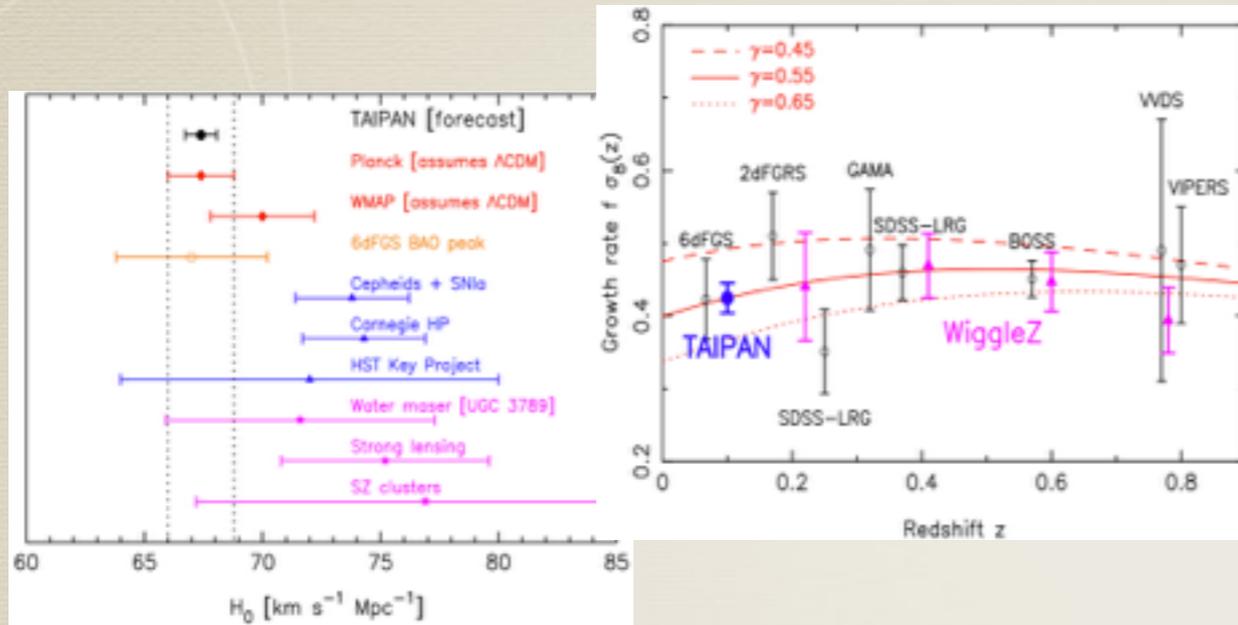
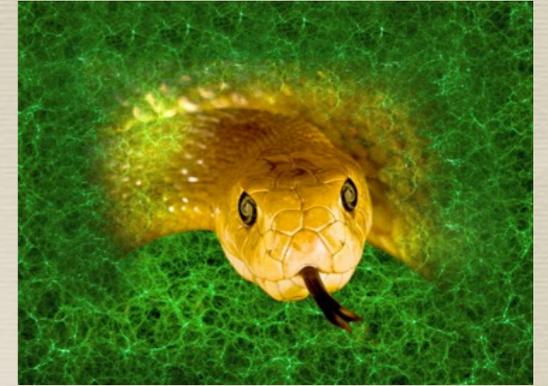
Taipan goals



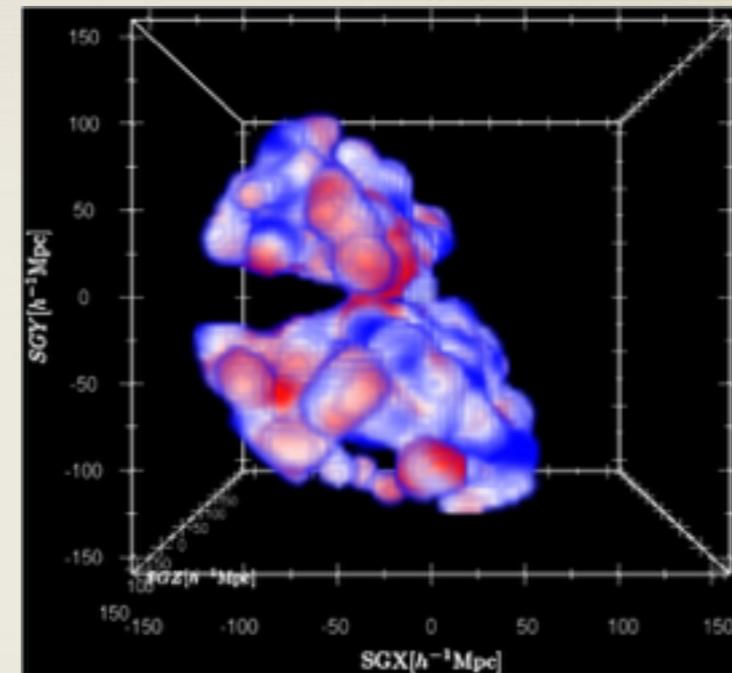
- 🐍 Three themes: **Cosmology, Galaxies, Stars**
- 🐍 The “**Stars**” theme is addressed by the **Funnelweb** survey, 20000000 stars to $V < 12$.
- 🐍 The “**Cosmology and Galaxies**” themes are addressed by the **Taipan galaxy** survey of around 5000000 galaxies to $i < 18$.
- 🐍 The primary key science goal for the Taipan survey is a 1% precision measurement of H_0 .
- 🐍 Additional key science goals for the Taipan survey include:
 - 🐍 Precision peculiar velocity survey
 - 🐍 Galaxy evolution, transition, environment, fuelling
- 🐍 Multiwavelength, complementary and legacy science.



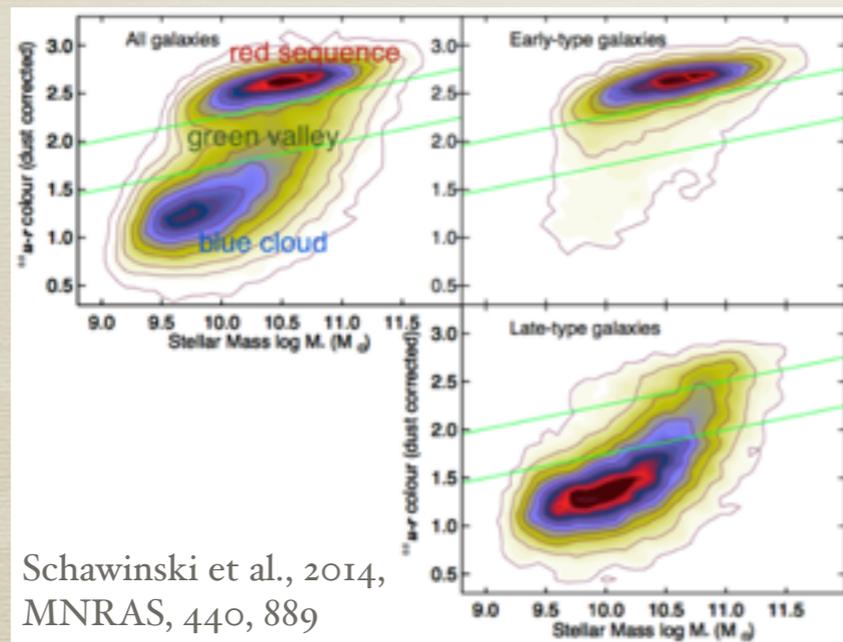
Taipan science



1% measurement of Hubble's constant and **5%** measurement of the growth rate of structure.



The most extensive and detailed map of the mass distribution and motions in the local Universe.

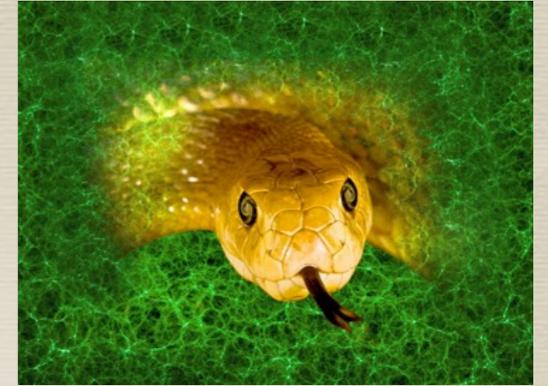


Schawinski et al., 2014, MNRAS, 440, 889

Identifying the mechanism that causes the cessation of star formation in galaxies, and moderates the transition from blue, active disk galaxies to red, passive spheroids.



Taipan science



 Complementary and multiwavelength science coming from:

 EMU

 WALLABY

 WISE

 eROSITA

 Legacy science coming from:

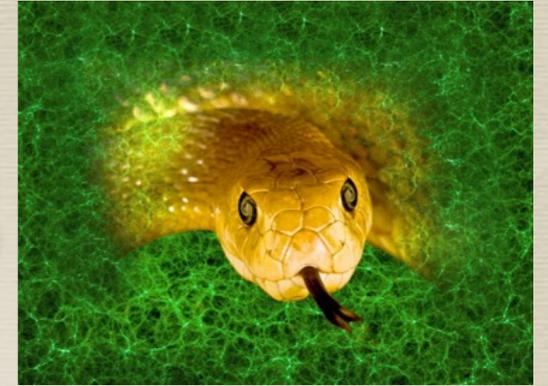
 Existence of redshifts for all Taipan sources (perhaps 2 million galaxies at $z < 0.3$);

 Derived galaxy properties for some fraction of these (perhaps 300000 to 400000 galaxies at $z < 0.1$);

 Hosting of Taipan survey archive at the AAO in the new ASVO Node currently in development.



Hardware status



All funded! Work continuing to progress on track for each of the positioner, spectrograph and telescope refurbishment.



Starbugs positioner: Preliminary demonstrations of prototype bugs and coherent polymer fibre bundles for auto-guiding and focal-plane characterisation on the UKST carried out in February. Fabrication of first 150 starbugs anticipated to be complete by December, for initial operations. Intention to submit LIEF proposal in 2016 to increase number to total of 300 during 2017.



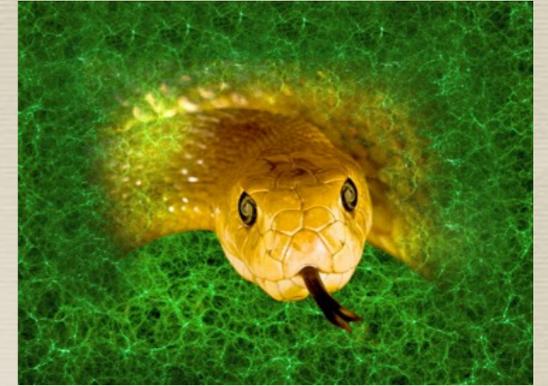
TAIPAN spectrograph: In progress, long lead-time elements ordered, anticipate construction to be complete by 2nd quarter 2016.



The UKST refurbishment: Work in progress now, expected to be finalised by late September.



Target selection



Likely options for Taipan galaxy survey input catalogues:

 SuperCOSMOS (optical) or potentially SkyMapper (optical).

 VISTA Hemisphere Survey (near-IR).

 WISE (mid-IR).

Starting point:

 SuperCOSMOS plus 2MASS and WISE.

 VHS DR3 expected soon (a few months). Want to be ready to incorporate.

Plan:

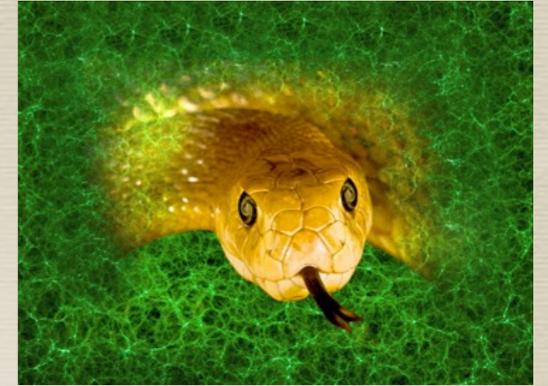
 Need to finalise target selection strategy.

 Initial survey operations.

 Full survey operations, with final photometry and target lists.



Goals



Next steps in target catalogue selection and strategy.

-  Initial target catalogue for calibration and testing, and start of survey operations.
-  Strategy for finalising photometry and target selection for full survey.

Develop the survey operations and strategy.

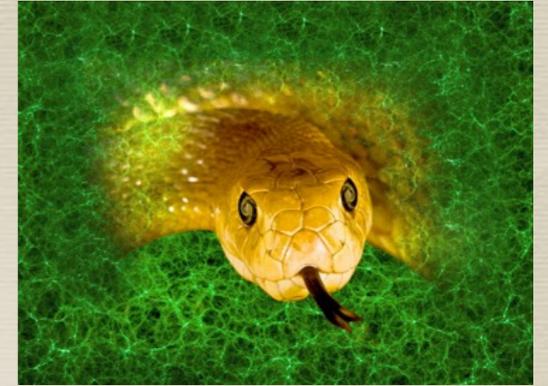
-  Tiling, fields, integration times, priority definition and mechanism.

Commissioning plan.

-  Commissioning targets, numbers of fields.
-  Reconfiguration tests.
-  Calibration strategy: stability of arcs/flats; spectrophotometry targets, repeats, etc.



Summary



Instrument + telescope funded, construction and refurbishment underway.



Taipan and Funnelweb survey teams in place, key science defined, survey strategy being refined.



Taipan and Funnelweb surveys to begin mid-2016, with approximately 5 year duration.



<http://www.taipan-survey.org/>