WEAVE

A New Wide-Field Multi-Object Spectrograph for the William Herschel Telescope



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Structure &dynamics: radial velocities

 10^6 stars 17 < V < 202 km/s accuracy



Accretion history: abundances in streams 5*104 metal-poor thick-disk and halo stars 17 < V < 18

Milky Way archaeology

Follow-up of ESA's GAIA mission.



Science

Summary

WEAVE is a new multi-object spectrograph (1000 fibres, 2-deg field) planned for the 4.2-m William Herschel Telescope on La Palma. First light is expected in 2016.

Nature of dark energy

Baryonic Accoustic Oscillations Redshift-Space distortions 10⁷ spectra over 10⁴ deg² Redshifts z~0.6-1.4

Star-formation density evolution

Spectroscopy of LOFAR complete census: ~1500 sources per deg²

Lyman-alpha emitters 104 emitters in 10 deg2

Galaxy evolution

dark+luminous matter Disk vertical velocity dispersion Mass-to-light ratio from disk dynamics

Nearby thin galaxy disks

Cosmology

Galaxy redshift surveys

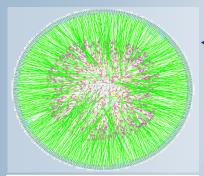
Science requirements for WEAVE

2 deg field of view.

MOS (multiplex 1000), IFU, mini-IFU front ends. Spectroscopic resolution:

R = 5000 (480 - 920 nm) for velocities,

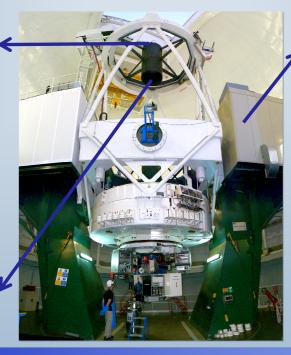
R = 20000 (280 - 680 nm) for element abundances. Throughput ~ 30%.



Fibre module

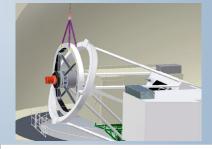
Design based on AAT's successful 2dF. This computer simulation shows the complexity of weaving 920 fibres to the required positions in the focal plane.

New prime-focus corrector Enlarged field of view 2 deg (currently 1 deg).



Spectrograph (in Nasmyth enclosure) 2-arm concept

VPH dispersers R = 5000, R = 20000



New top-end ring

Model of new exchangeable top-end ring (with new corrector + fibre module) being craned into position.

For further information: http://www.ing.iac.es/weave/

The WEAVE Consortium

A pan-European consortium has been established to promote the development of WEAVE. The total cost of the project, including the new prime-focus corrector for the WHT, is estimated to be £10M.









