WEAVE

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

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Summary

LA PALMA

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 2017. WHT/WEAVE will powerfully complement

Nature of dark energy: **Baryonic Accoustic Oscillations** Science Redshift-Space distortions 10⁷ spectra over **Accretion history:** 10^4 deg^{2} , redshifts z~0.6-1.4 abundances in streams 5*10⁴ metal-poor thick-disk and halo stars 17 < V < 18**Galaxy evolution Star-formation density** evolution Cosmology Spectroscopy of LOFAR Galaxy redshift surveys complete census: ~1500 sources per deg² **Science Requirements** Nearby thin galaxy disks 2 deg field of view. dark+luminous matter MOS (multiplex 1000), IFU, mini-IFU front ends. Disk vertical velocity dispersion Spectroscopic resolution:

Lyman-alpha emitters

R = 5000 (380 - 980nm) for velocities,

10⁴ emitters in 10 deg²

from disk dynamics

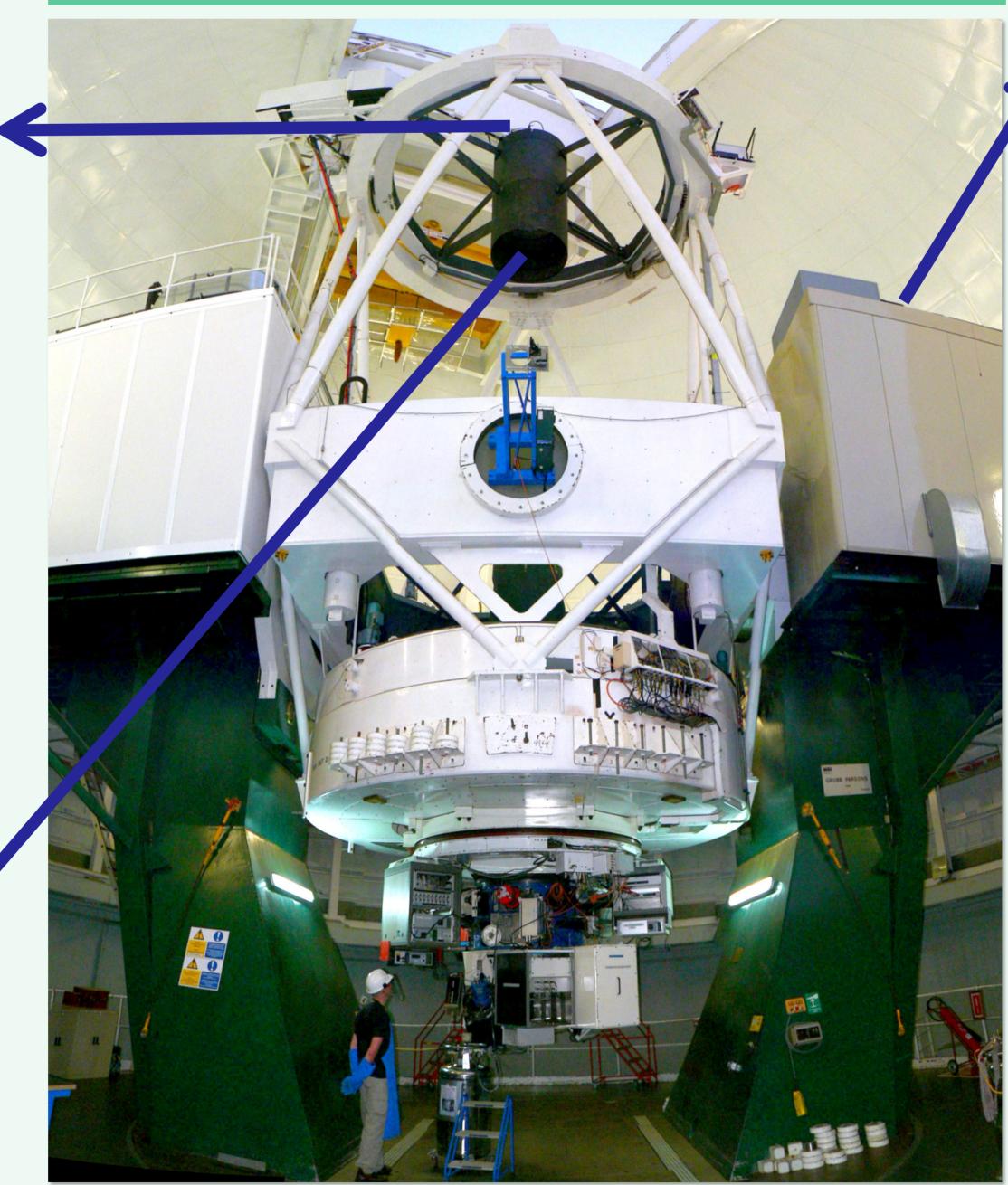
Mass-to-light ratio

R = 20000 (480 - 680 nm) for element abundances. Throughput ~ 20%.

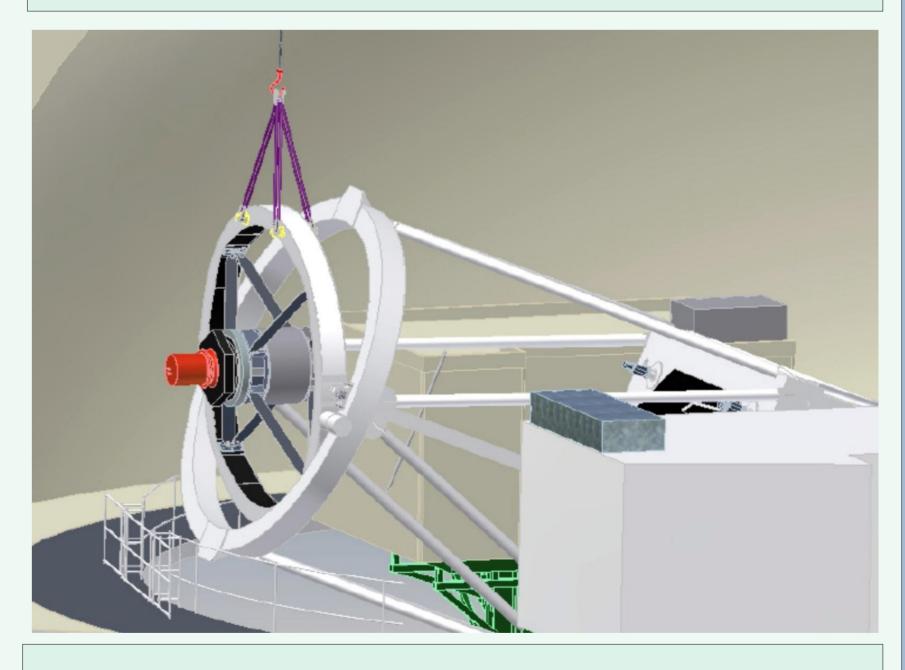
Fibre module

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.

Instrument Concept



Spectrograph (in Nasmyth enclosure) 2-arm concept VPH dispersers R = 5000, R = 20000



New top-end ring

New prime-focus corrector Enlarged field of view 2 deg (currently 40 arcmin).

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/

WEAVE Design, Construction and Exploitation

WEAVE is being designed and built by a European consortium led by the ING partner countries. The preliminary design review is expected at the end of 2012, and science observations should start in 2017. The total cost of design and construction, including the new prime focus corrector for the WHT, is €12M.

It's expected that a large fraction of WHT time will be devoted to surveys with WEAVE. Surveys spanning a large range in apparent magnitude can be carried out via coordinated exploitation of the large FOV/multiplex offered by WHT/WEAVE, and the greater depth of observations with GTC OSIRIS, MEGARA and MIRADAS.

