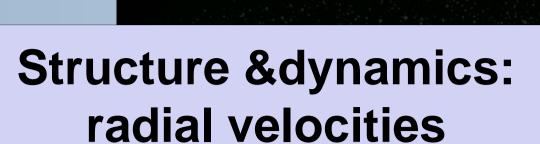
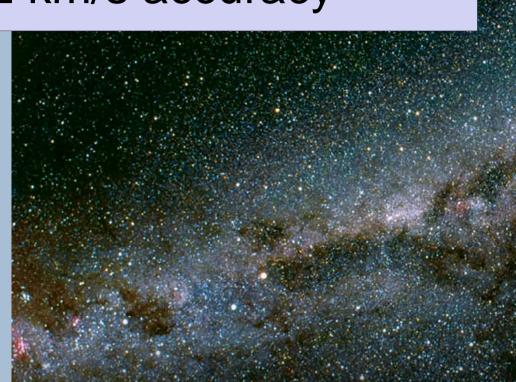
### WEAVE

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

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



**Accretion history:** abundances in streams 5\*10<sup>4</sup> metal-poor thick-disk and halo stars 17 < V < 18

## Milky Way archaeology

Follow-up of ESA's GAIA mission.



#### 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 2017. WHT/WEAVE will powerfully complement the 10.4-m GTC.

#### Nature of dark energy: **Baryonic Accoustic Oscillations**

Redshift-Space distortions 10<sup>7</sup> spectra over 10<sup>4</sup> deg<sup>2</sup>, redshifts z~0.6-1.4

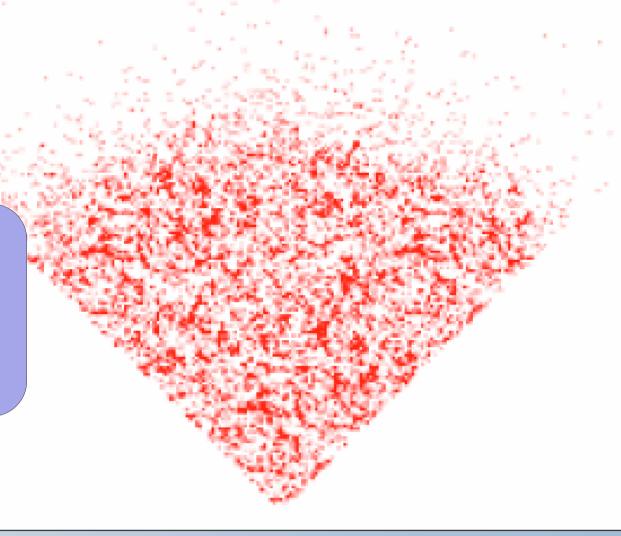
# **Star-formation density**

Spectroscopy of LOFAR



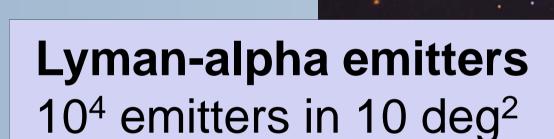
Cosmology

Galaxy redshift surveys



## evolution

complete census: ~1500 sources per deg<sup>2</sup>



#### Nearby thin galaxy disks dark+luminous matter

Disk vertical velocity dispersion Mass-to-light ratio from disk dynamics

#### **Science Requirements**

2 deg field of view.

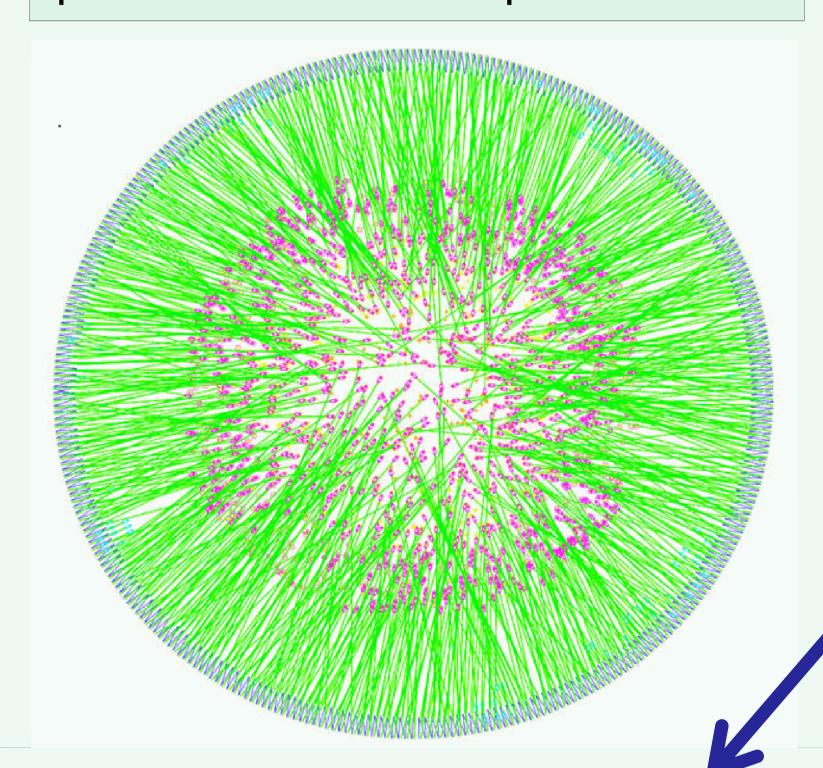
MOS (multiplex 1000), IFU, mini-IFU front ends. Spectroscopic resolution:

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

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

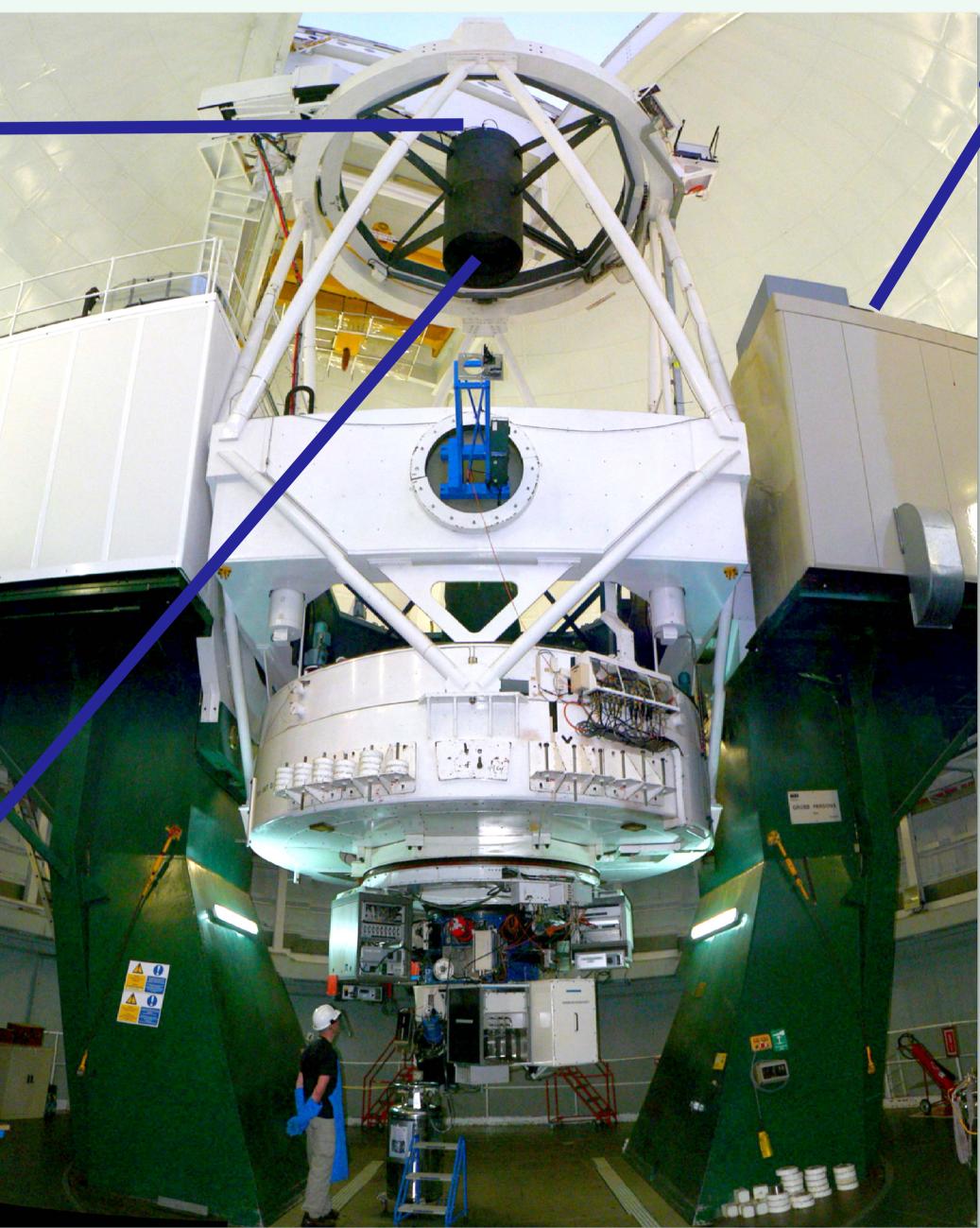
#### Fibre module

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



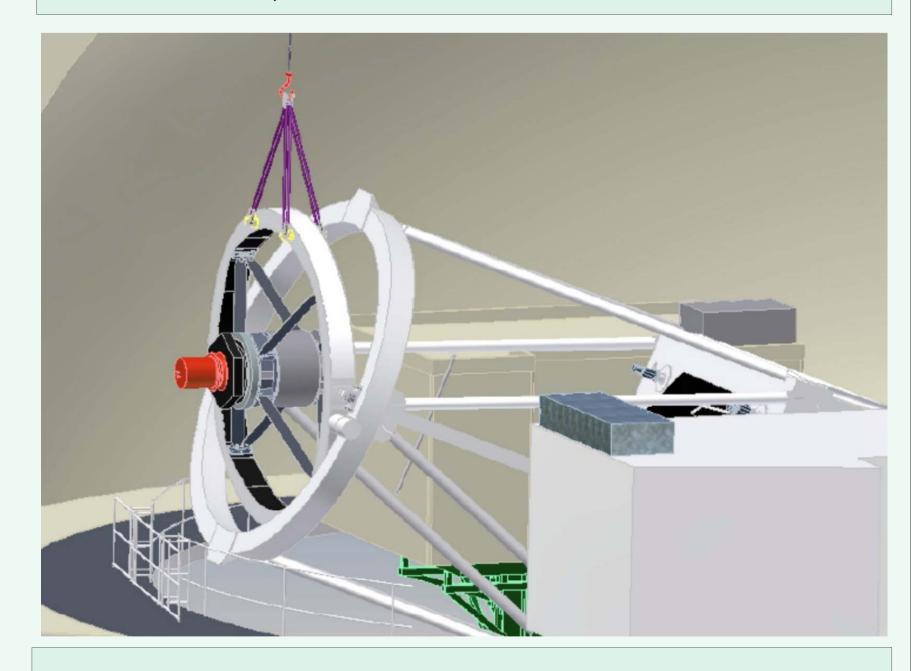
New prime-focus corrector Enlarged field of view 2 deg (currently 40 arcmin).

# **Instrument Concept**



#### 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/

#### 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.

