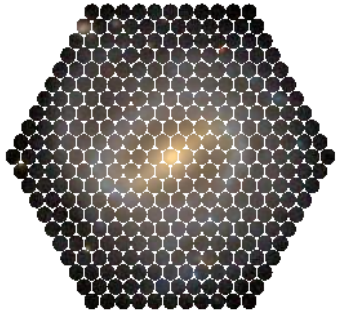
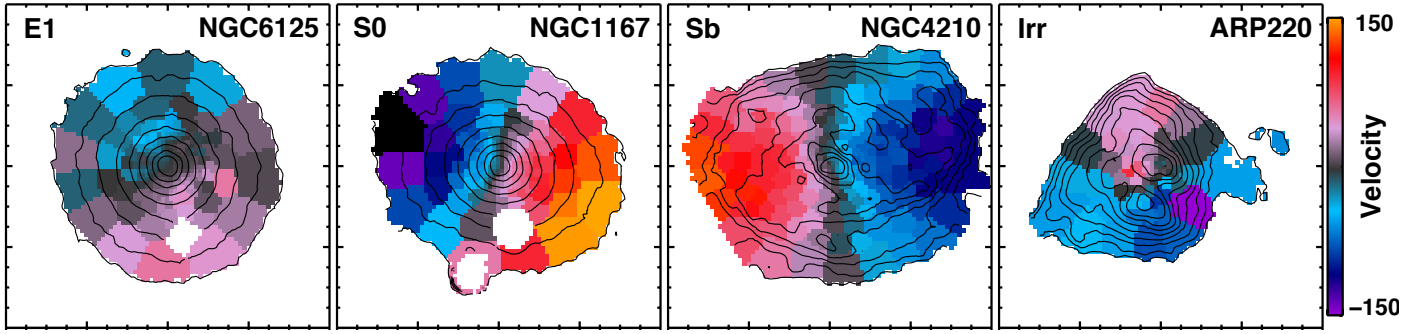


CALIFA Survey

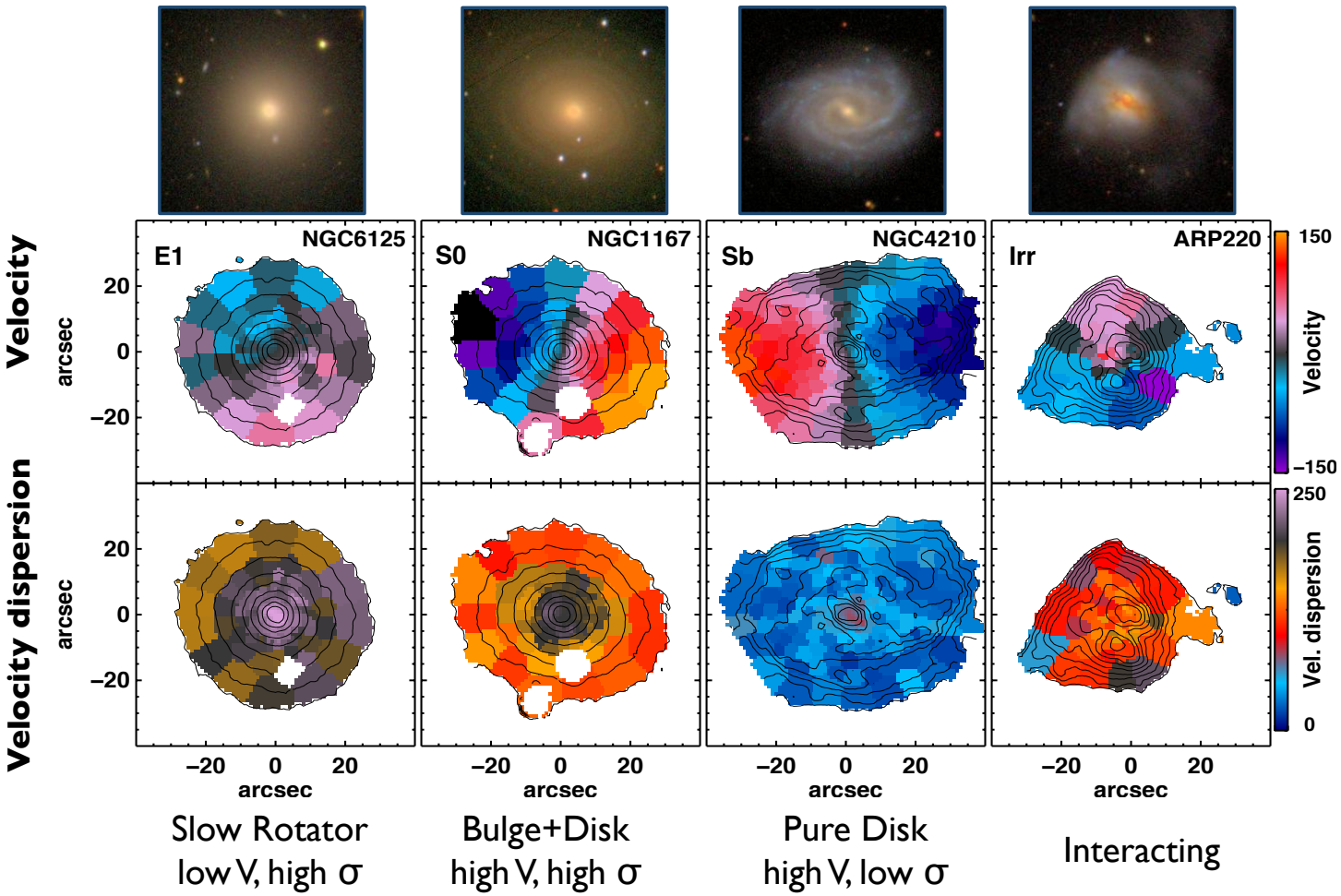
CALIFA

600 galaxies across the Hubble sequence in 3D

Mariya Lyubenova (MPIA)
and the CALIFA team

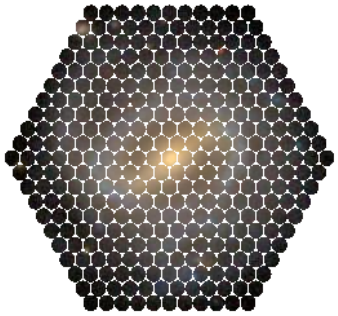


Stellar Kinematics & Dynamics at MPIA



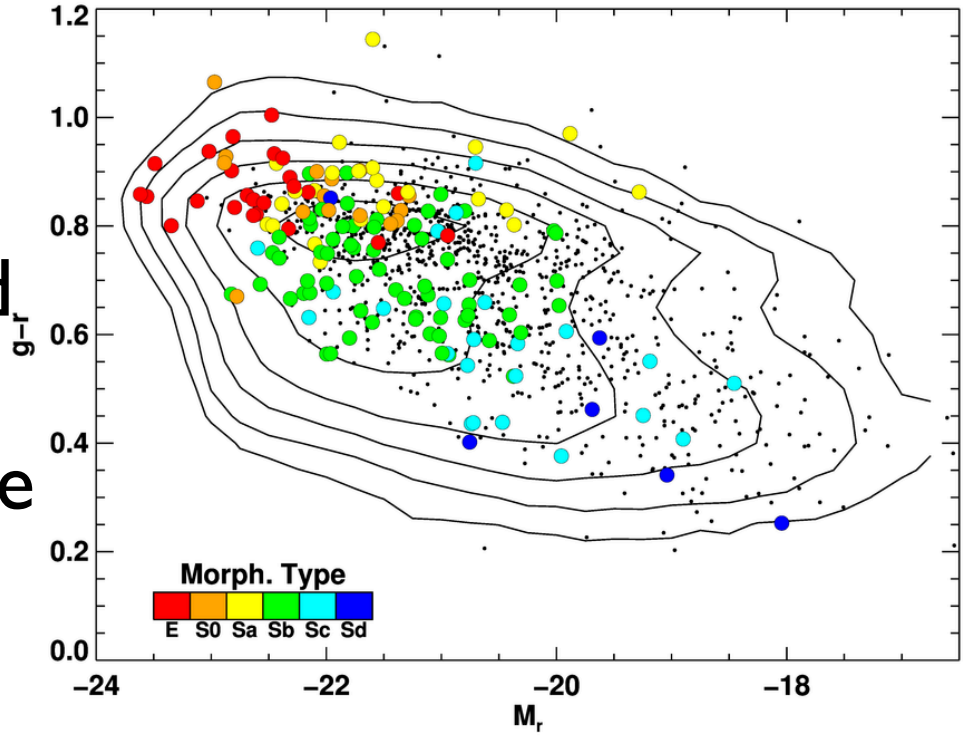
- Glenn van de Ven
- M. Lyubenova
- Robert Singh
- Vesselina Kalinova
- Knud Jahnke

CALIFA over the Red Sequence and the Blue Cloud

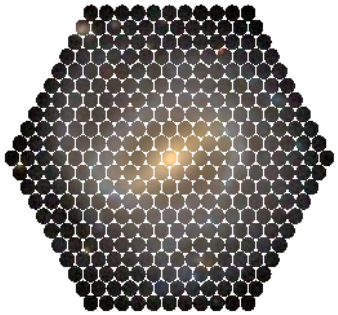


CALIFA Survey

Legacy Survey of a large and representative sample of galaxies in the local Universe using optical Integral Field Spectroscopy

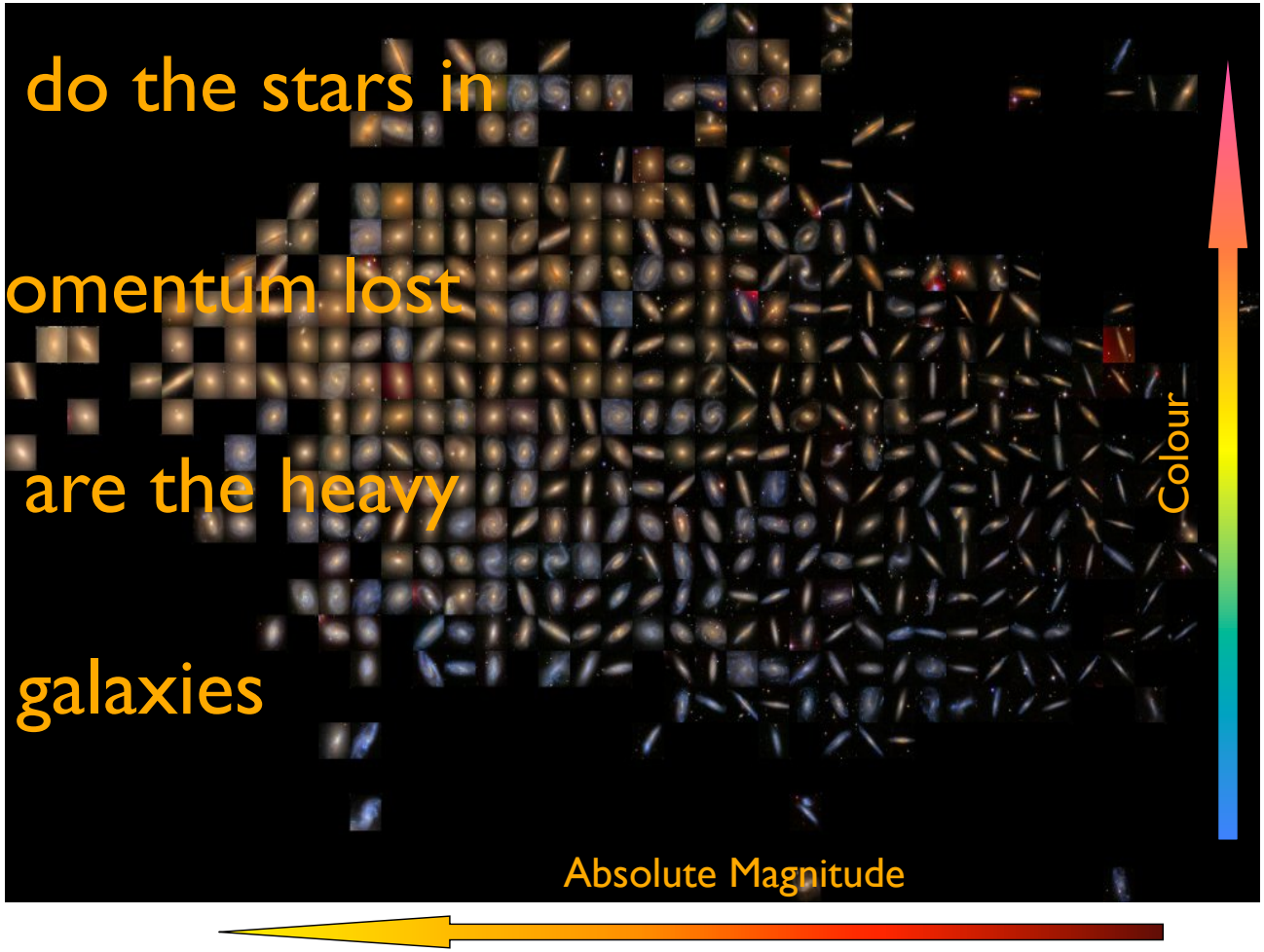


CALIFA's Science Drivers

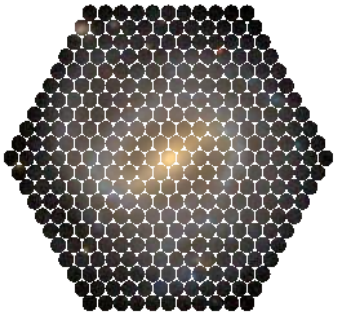


CALIFA Survey

- Where and when do the stars in galaxies form?
- How is angular momentum lost and found?
- Where and when are the heavy elements made?
- How is the gas in galaxies processed?



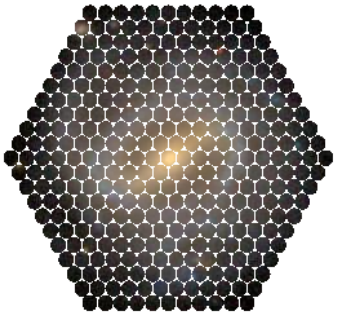
CALIFA will provide...



CALIFA Survey

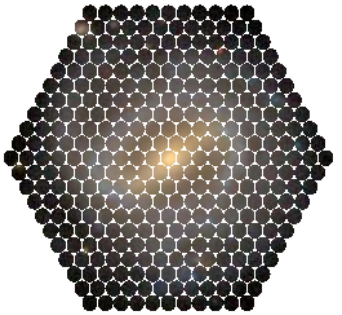
- Stellar populations ages and metallicities
- Ionised gas: distribution, excitation mechanism and chemical abundances
- Kinematics: both from stellar and ionised gas components
- Probe targets over their whole optical extent

CALIFA's sample

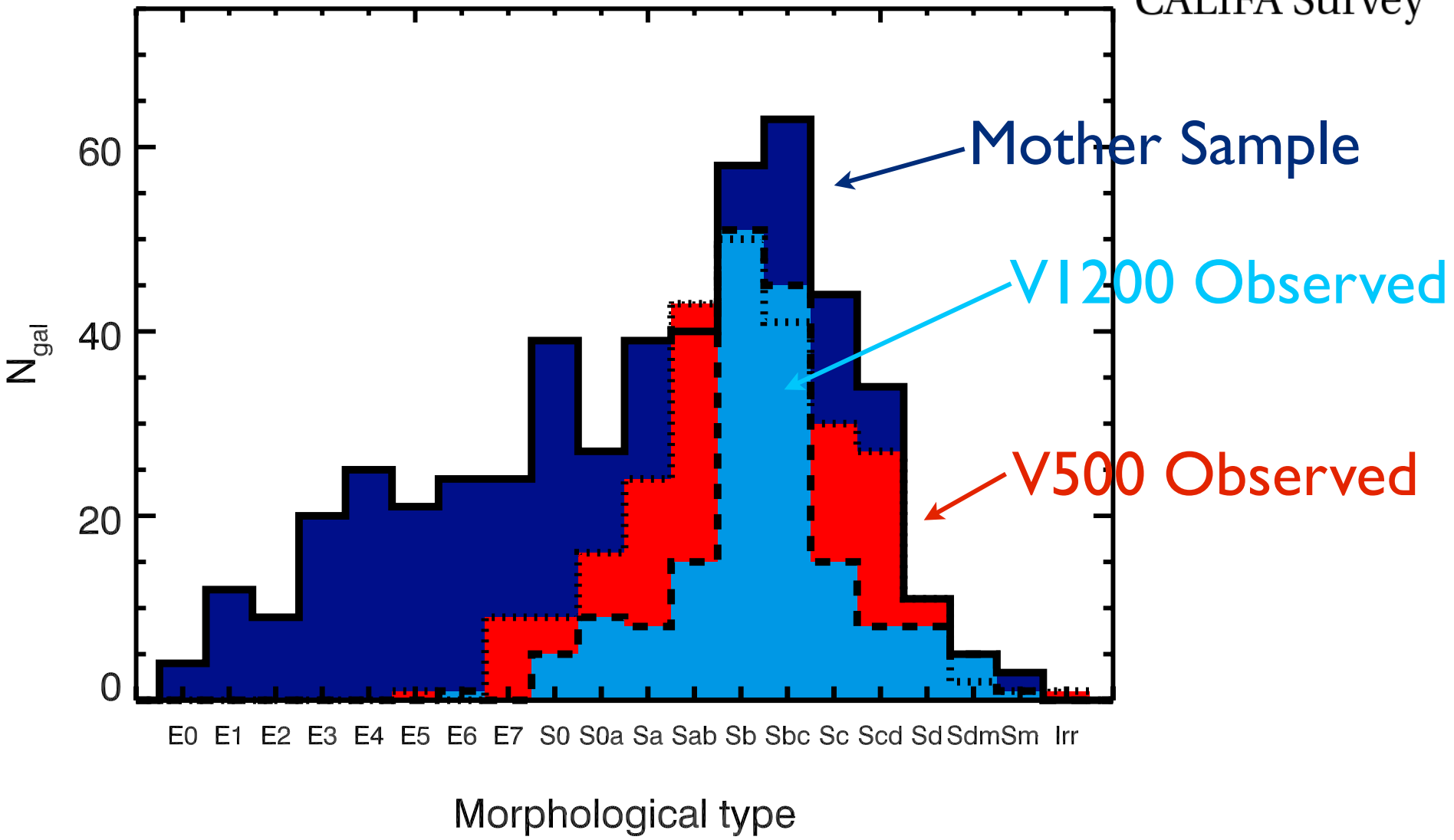


- 600 galaxies will be observed out of
- a mother sample of 937 galaxies
- selected from SDSS imaging
- 45" < D_{25} < 80" isophotal radius at 25 mag/arcsec^2
- Redshift range: 0.005 < z < 0.03
- Final spatial resolution: 2" ≈ 0.5-1 kpc

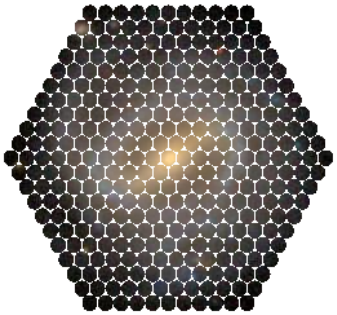
CALIFA's sample



CALIFA Survey

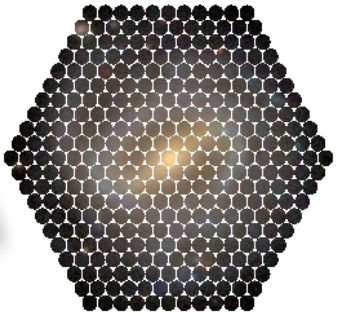


CALIFA's budget

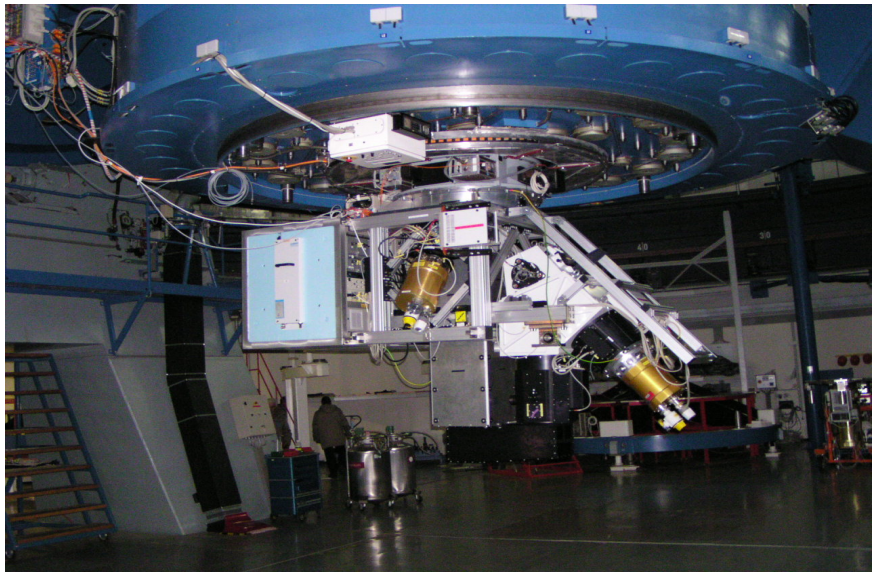


- 210 dark nights in 3 years at Calar Alto Observatory
- ~2.5 Million Euros in telescope time
- 80 scientists from 20 institutions in 7 countries
- PI: S. F. Sánchez (IAA), PS: J. Walcher (AIP)
- Young researchers (~35 years)
- Project started on July 1 2010
- First Data Release: Nov 1 2012
- First papers already on astro-ph

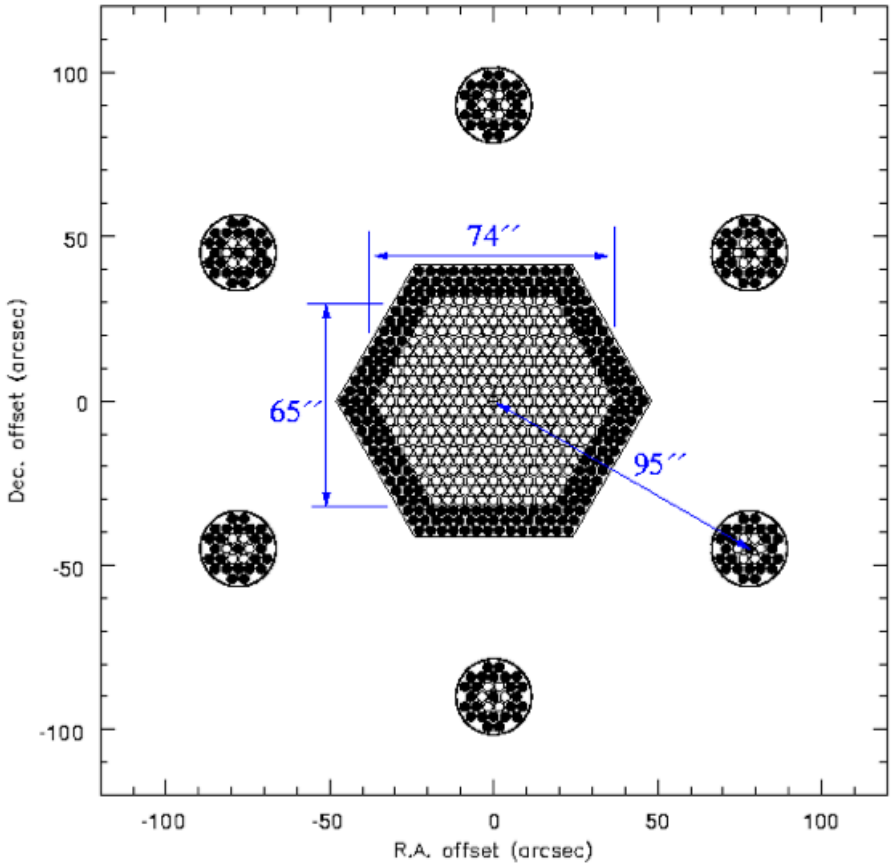
PPAK/PMAS@3.5 m CAHA



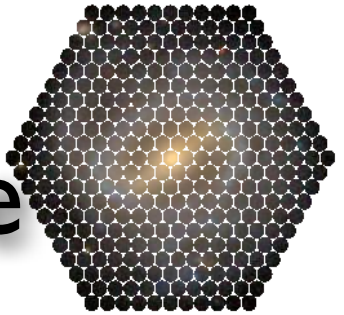
CALIFA Survey



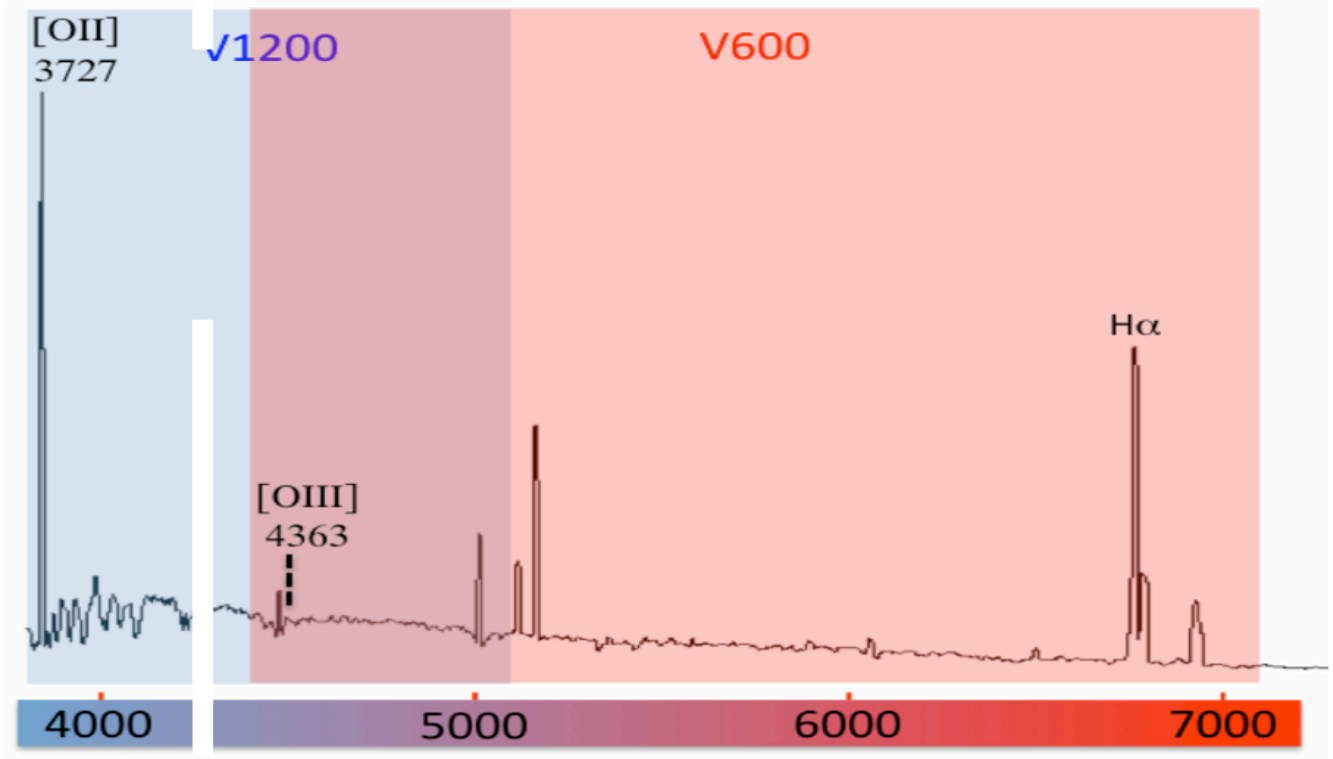
- 331 science fibres
- 36 dedicated sky fibres
- 2.7” diameter fibres
- 2/3 filling factor



CALIFA's wavelength coverage



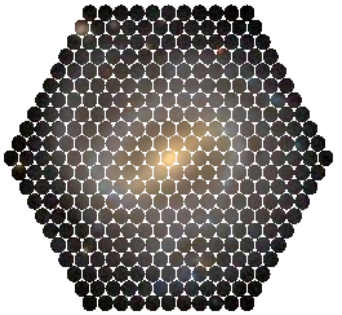
CALIFA Survey



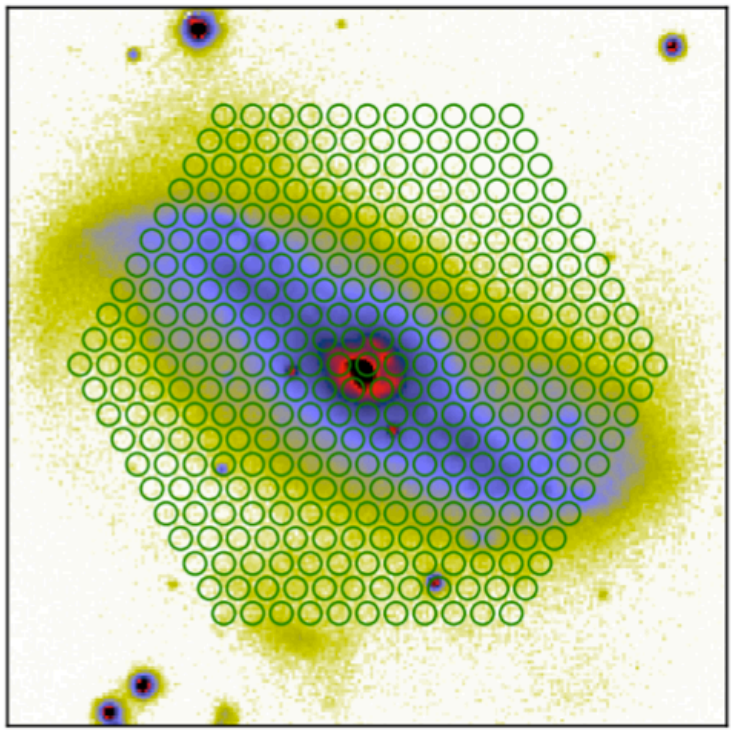
2 gratings:

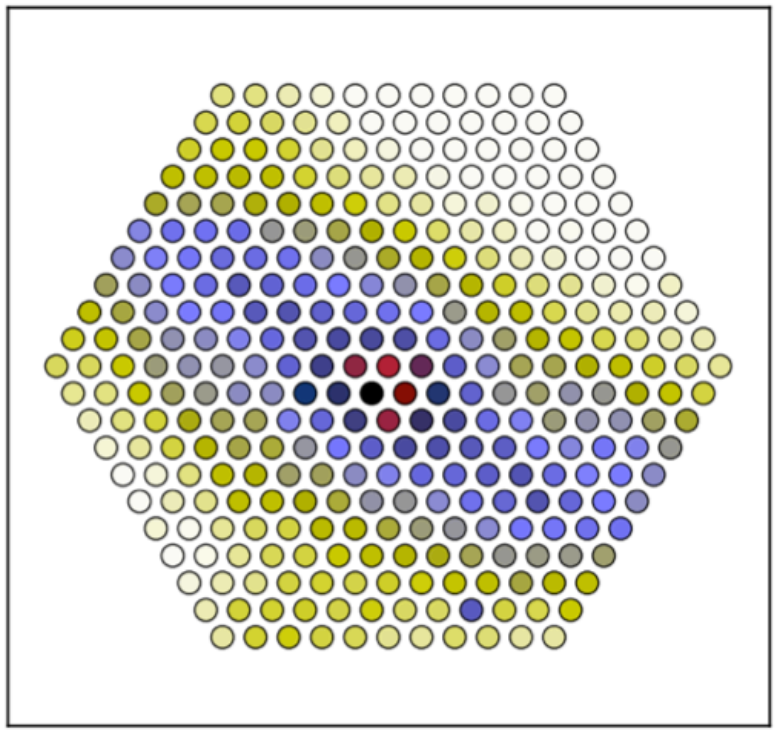
- V500: R~850, 3745 - 7300 Å
- V1200: R~1650, 3400 - 4750 Å

CALIFA's spatial coverage



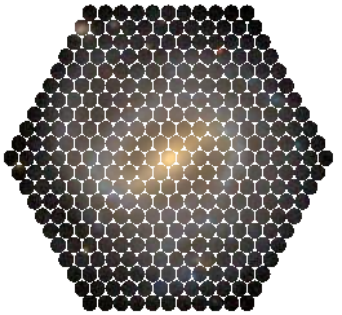
CALIFA Survey



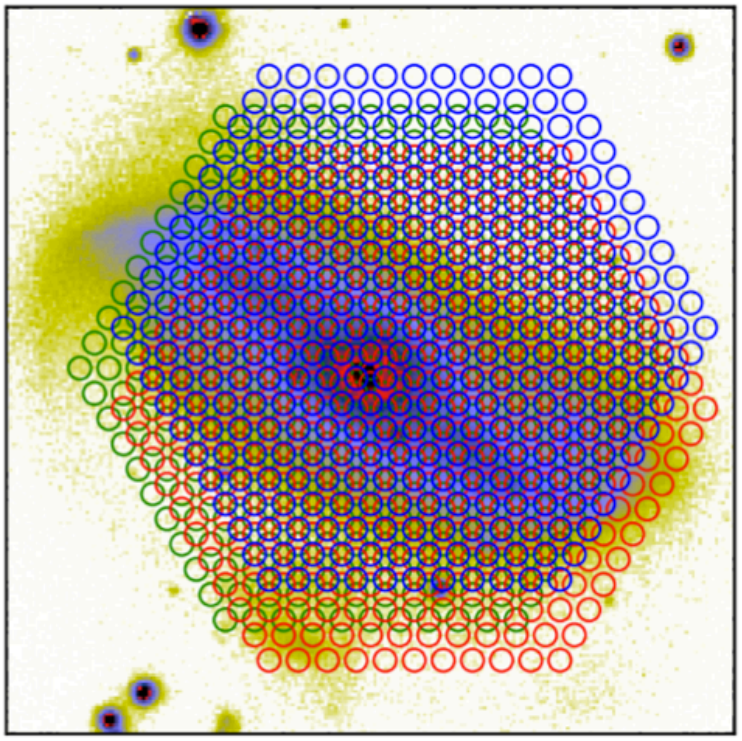


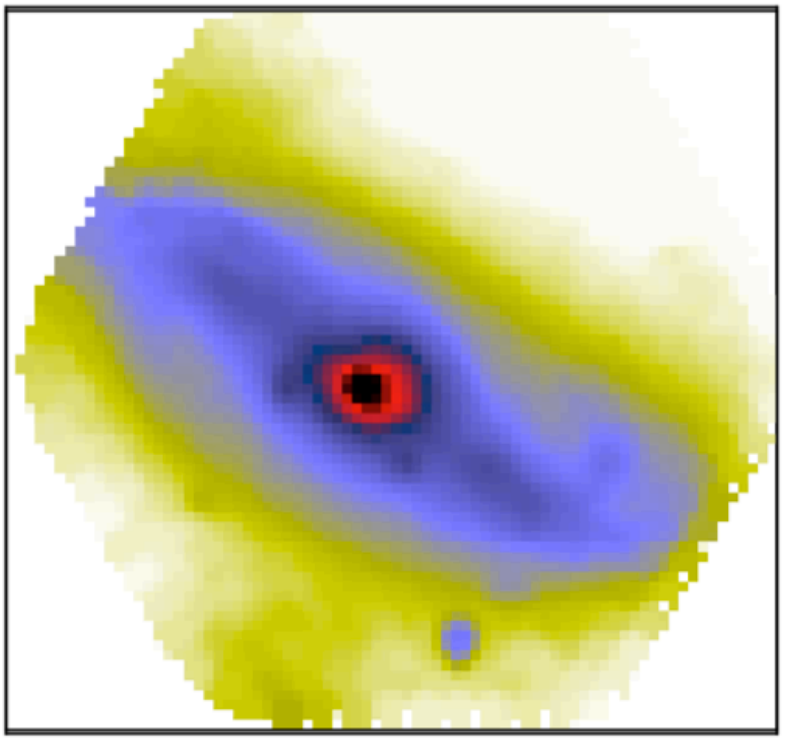
- An individual PPAK pointing has a low filling factor

CALIFA's spatial coverage



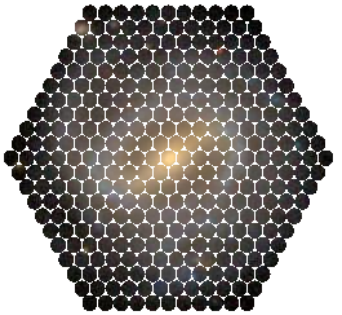
CALIFA Survey





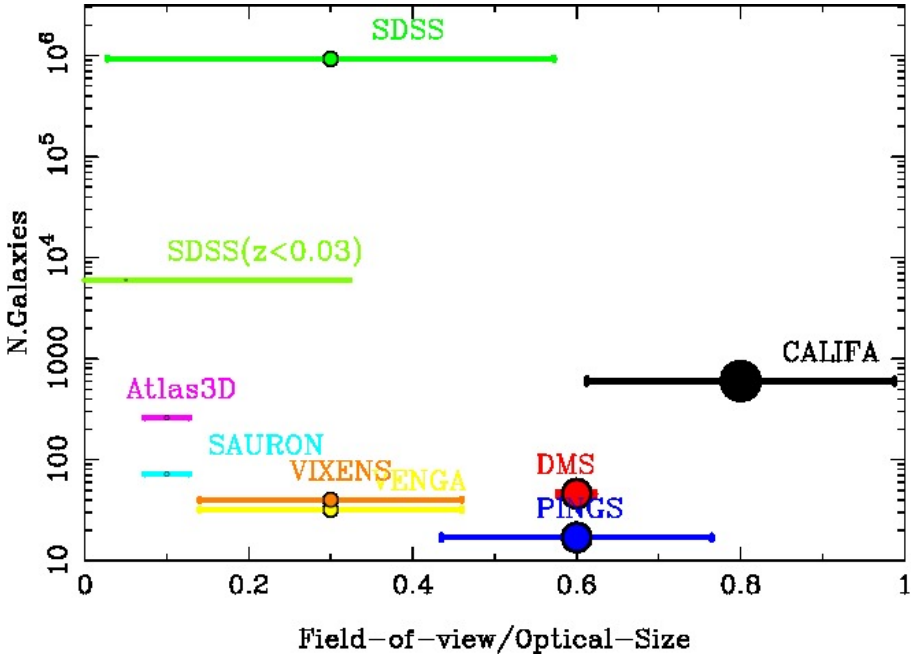
- An individual PPAK pointing has a low filling factor
- 3 dither pointings allow image reconstruction

Where do we stand?

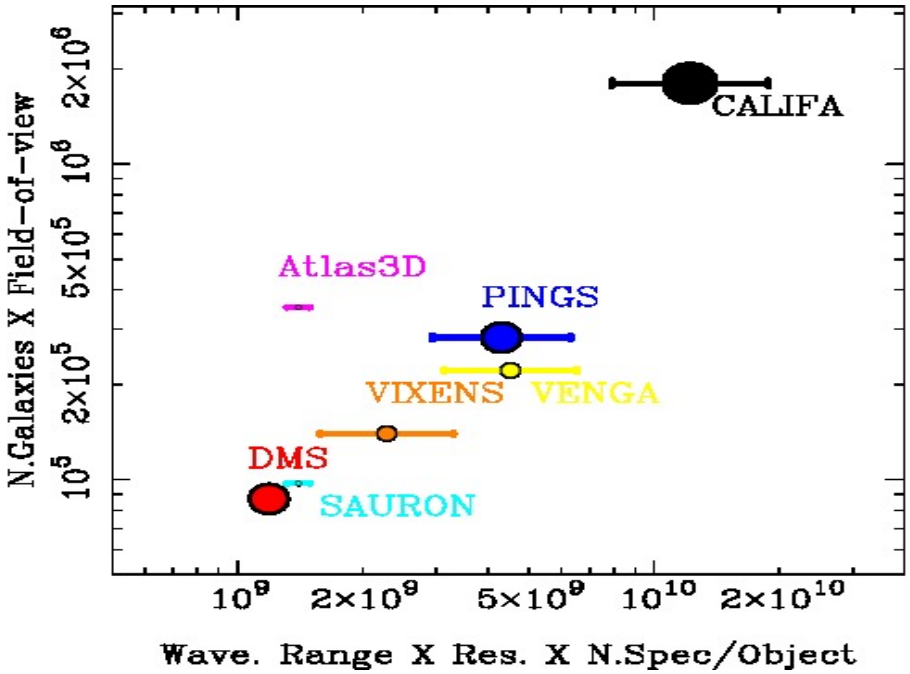


CALIFA Survey

Sample size vs. FoV coverage

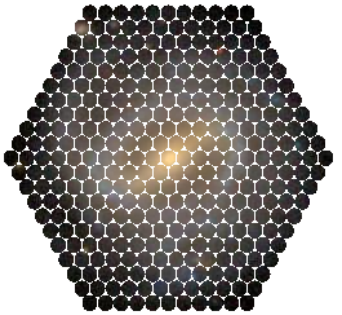


Coverage vs. spectral content



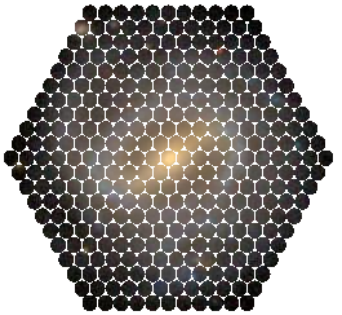
- CALIFA will contain more galaxies than any IFU survey before
- CALIFA will collect ~1 Million spectra (similar to SDSS)

CALIFA Data Release 1



- DR1 happened on Nov 1 2012
- 100 galaxies in both setups (V500 and V1200)
- Fully calibrated data cubes + errors
- Extensive automatic and manual quality control checks
- Dedicated DR1 website + VO access

Data Quality



- Characteristic performance: V500 V1200
  - Surface brightness 3σ: 23.0 22.8 mag/arcsec^2
  - Wavelength calibration: 5 10 km/s
  - Wavelength resolution 150 85 km/s

  - Flux calibration: ~ 15% relative (blue-to-red)
    ~ 15% absolute (tied to SDSS)
- Primary products:
  - Resampled data cubes with 1 arcsec/spaxel
  - Meaningful noise cubes!

Sanchez et al., 2012
Husemann et al., 2013

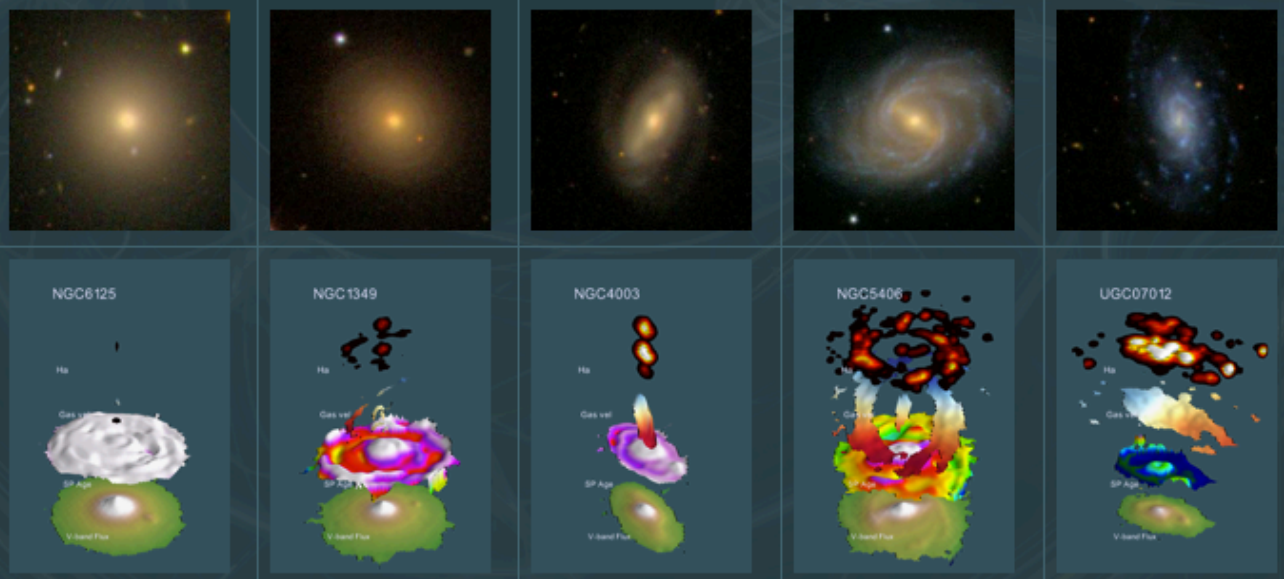
CALIFA SURVEY

Calar Alto Legacy Integral Field spectroscopy Area survey

Home | Observed Objects | News | Publications | Contact | Next Events

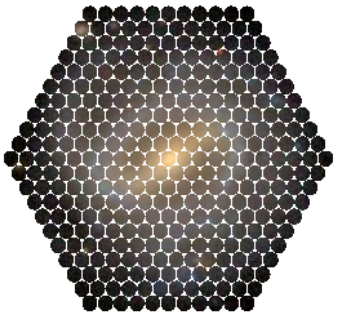
- CALIFA Summary
- CALIFA DR1
- CALIFA Red Book
- CALIFA Collaboration
  - Members
  - Structure
  - Publications
- News
  - News
  - Next Events
- CALIFA Sample
  - Observed Objects Up-to-Date
  - SDSS Poststamps: Obs. Sample
  - SDSS poststamps: Full sample
- CALIFA Meetings
  - 5th Busy Week
  - 4th Busy Week
  - 3rd Busy Week
  - 2nd Busy Week
  - 1st Busy Week

CALIFA 1st DATA RELEASE

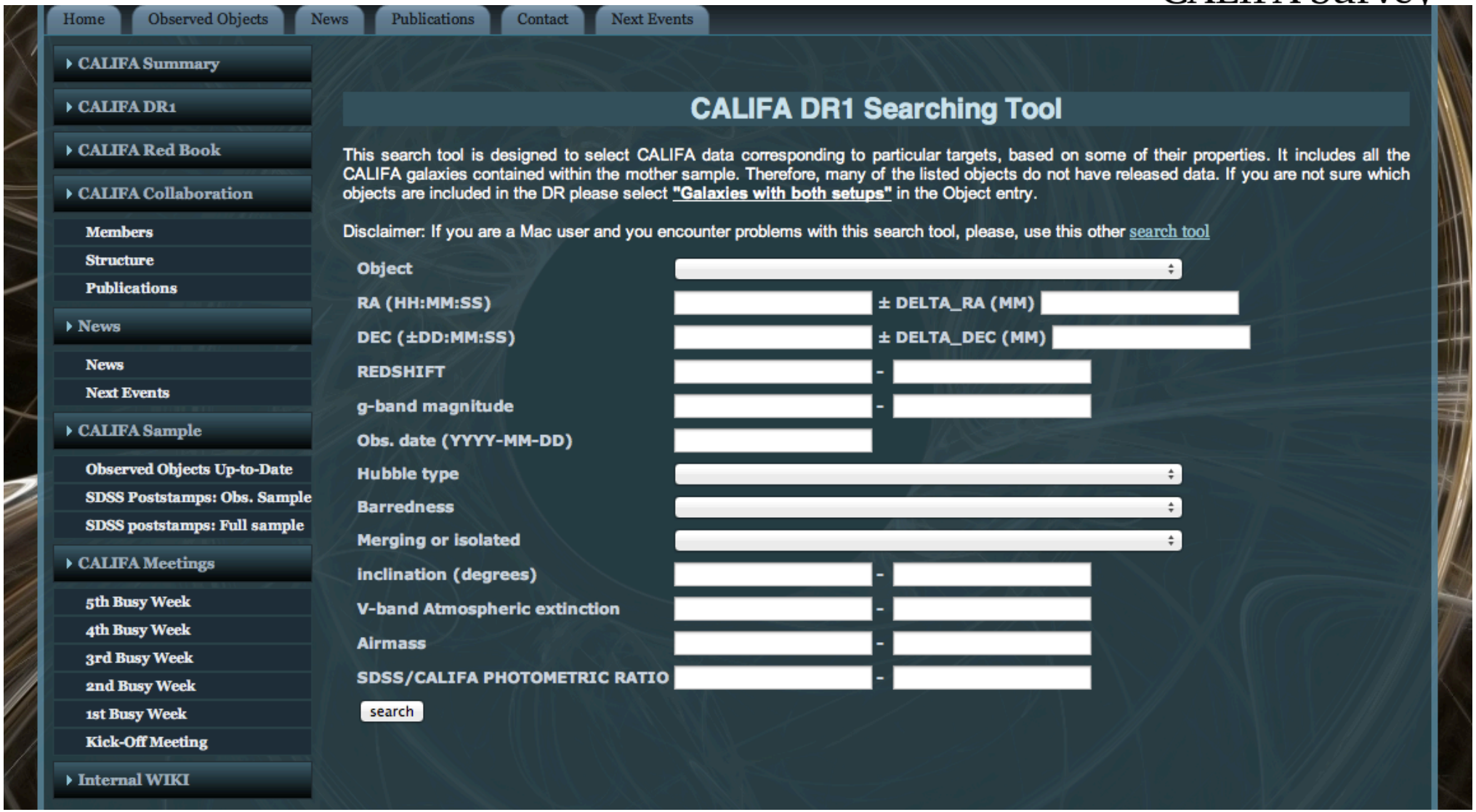


Data Access

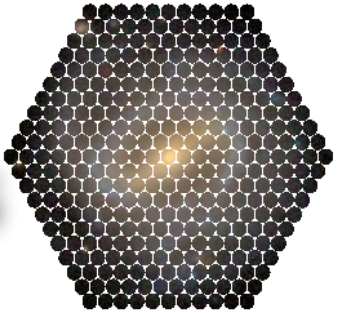
http://califa.caha.es/DR1



CALIFA Survey



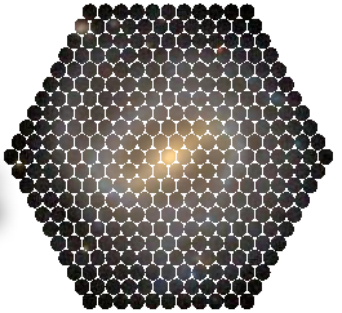
Virtual Observatory Access



CALIFA Survey

- CALIFA data can be accessed using the VO Table Access Protocol (TAP)
  - tables describing each cube as a single data product (califadr1.cubes) + QC parameters
  - tables containing all fluxes of the entire DR1 by position and wavelength (califadr1.fluxv500 and califadr1.fluxv1200)
- Individual spectra can also be accessed using IVOA's Simple Spectral Access Protocol

Virtual Observatory Access



CALIFA Survey

GERMAN ASTROPHYSICAL GAVO VIRTUAL OBSERVATORY

Help

Service info

Related

Tables available for ADQL

Metadata

Identifier >>

Description >>

Keywords >>

Creator >>

Created >>

Data updated >>

Reference URL >>

Try ADQL to query our data.

Please report errors and problems to the site operators. Thanks.

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Log in

ADQL Query

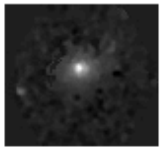
Parameters

- ADQL query: SELECT Target_name,califaid, setup, accref, flag_red_r, cal_sn_mean_win, hubtype from califadr1.cubes NATURAL JOIN califadr1.objects where flag_red_r=0 and cal_sn_mean_win>30 and setup='V500' and hubtype='E'

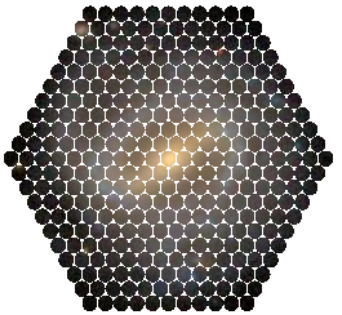
Result

Matched: 8

Send via SAMP | Quick Plot

Target_name	CALIFA#	Setup	Product key	Flag_red_r		S/E
NGC6150	835	V500	NGC6150.V500.rscube.fits.gz	0	42.8934	E
NGC7194	881	V500	NGC7194.V500.rscube.fits.gz	0	45.1532	E
NGC6146	832	V500	NGC6146.V500.rscube.fits.gz	0	43.5375	E
NGC6173	840	V500	NGC6173.V500.rscube.fits.gz	0	31.7709	E
NGC6411	859	V500		0	45.5222	E
UGC05771	341	V500	UGC05771.V500.rscube.fits.gz	0	30.1138	E
NGC6125	829	V500	NGC6125.V500.rscube.fits.gz	0	41.3735	E
UGC10693	845	V500	UGC10693.V500.rscube.fits.gz	0	39.634	E

Concluding Remarks



- CALIFA is the largest (so far) IFS survey of ***all Hubble types*** of galaxies
- CALIFA is a legacy survey, data are being collected, quality is excellent, and all will be public!
- Data access though several channels:
  - dedicated web service
  - direct ftp access
  - VO access and queries