



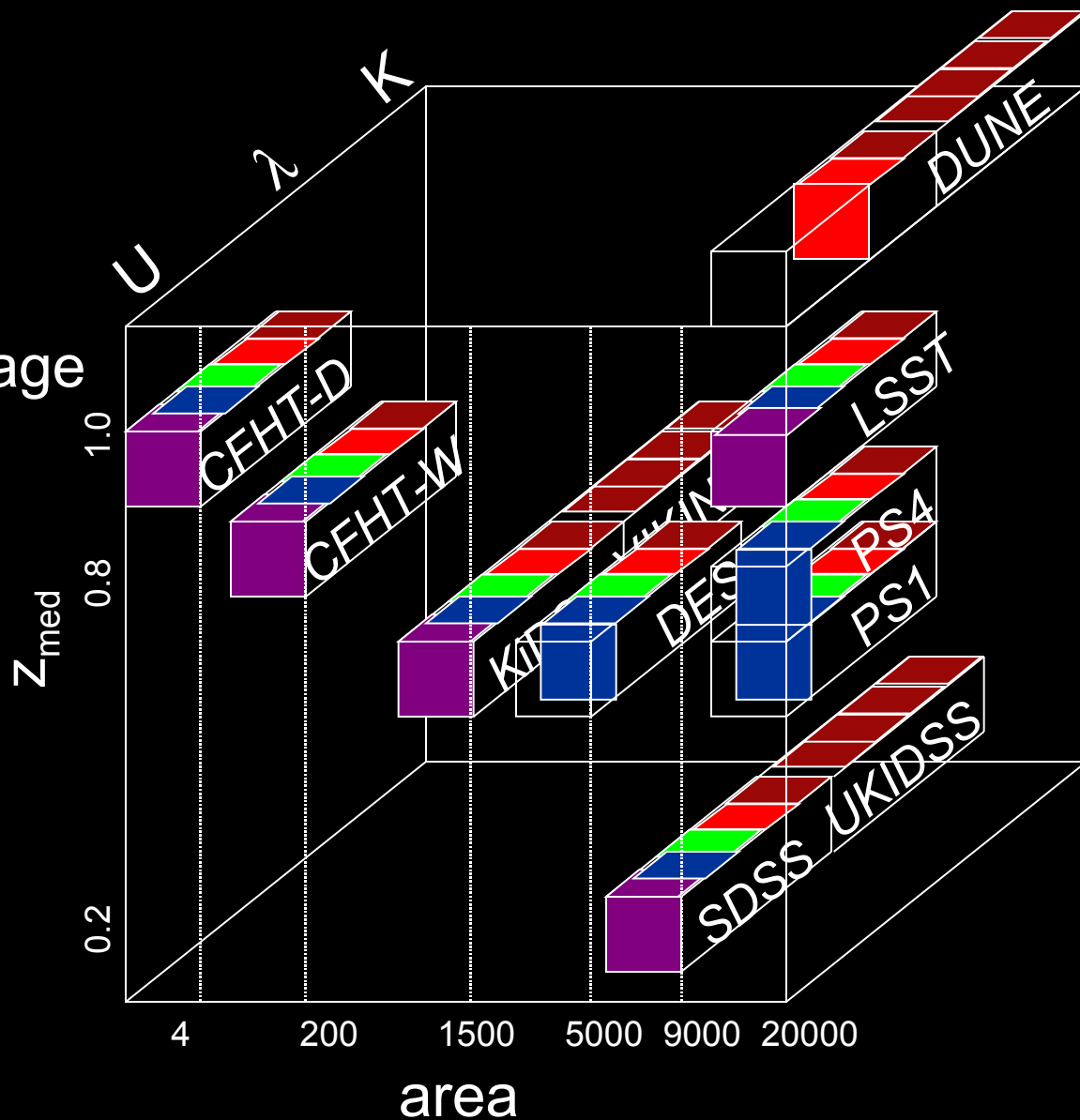
The Kilo-Degree Survey

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Leiden Observatory

Survey parameters

- Area covered
- Median redshift
- Image quality
- Wavelength coverage



Science Objectives

- Dark matter distribution through weak lensing
- Collateral damage:
 - Galaxy evolution as related to environment
 - Cluster counts/samples
 - Stellar halo
 - Faint end of stellar Lum.Fn.
 - High-z qso's

Dark matter / weak lensing

- Mass concentrations along line of sight deflect light rays.
Gradient \rightarrow distortion \rightarrow correlated ellipticities
- Probe of
 - Galaxy halos: mass, extent, shape
 - Large scale structure *mass* power spectrum
- As function of source redshift:
 - Growth history $\rightarrow H(z)$

Cosmology with lensing

- Structure growth rate depends on expansion history of universe
- Measure both \rightarrow test of GR
- Space missions (JDEM, EDEM)
 - Ground-based surveys pave the way

Technical requirements

Shears

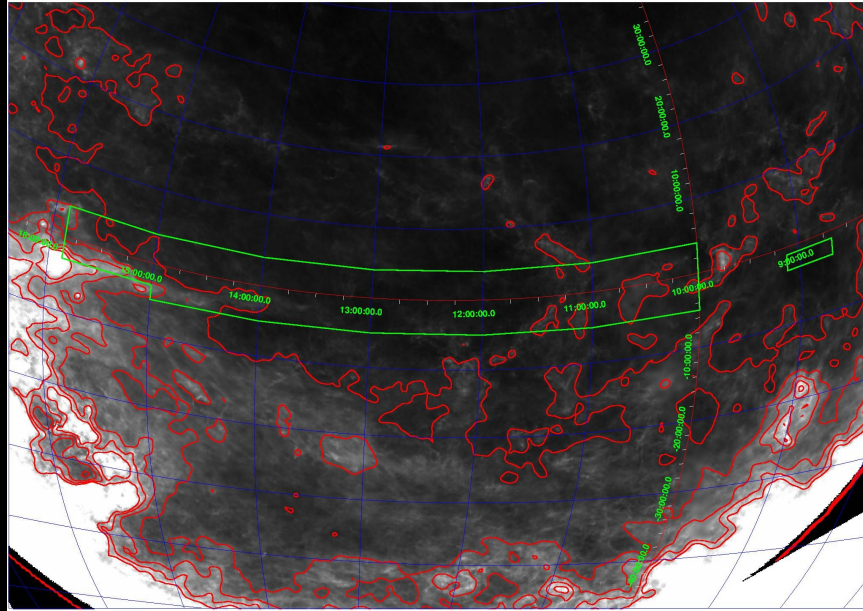
- Good image quality
 - Service mode, autofocus
- Well-behaved PSF
 - VST design
 - Good astrometry
- High-fidelity ellipticities
 - STEP project
 - KSB, shapelets, lensfit?

Redshifts

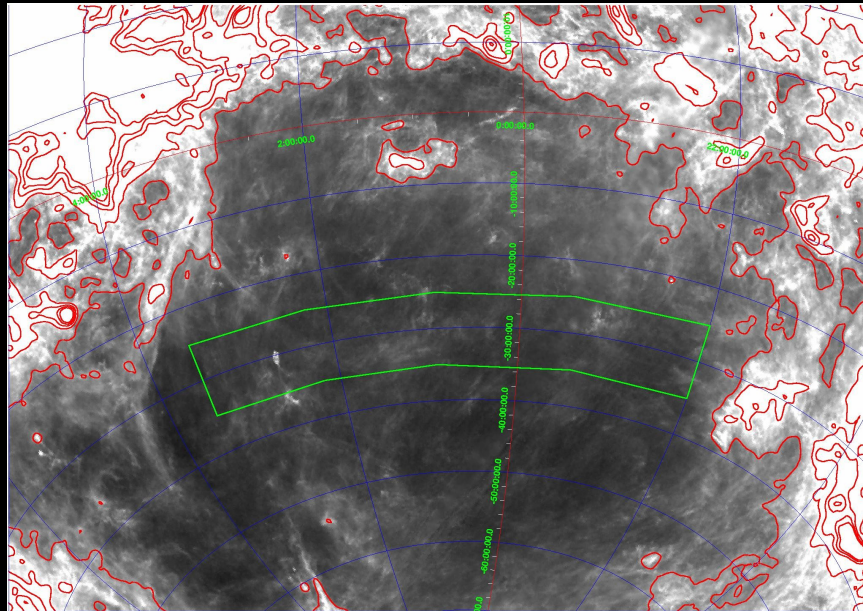
- Photo-z's, many bands
 - KiDS + VIKING
- Photometric calibration
 - Calibration plan
 - Overlap with SDSS, S.SkyMapper
 - extinction
- High-fidelity photo-z's
 - PSF-matched aperture phot.
 - PHAT project
 - Spectroscopic calibration

Extinction

- N: equator
 - α 10 - 15:50h
 - δ -5 - +4°
 - 14 sq.deg in W2

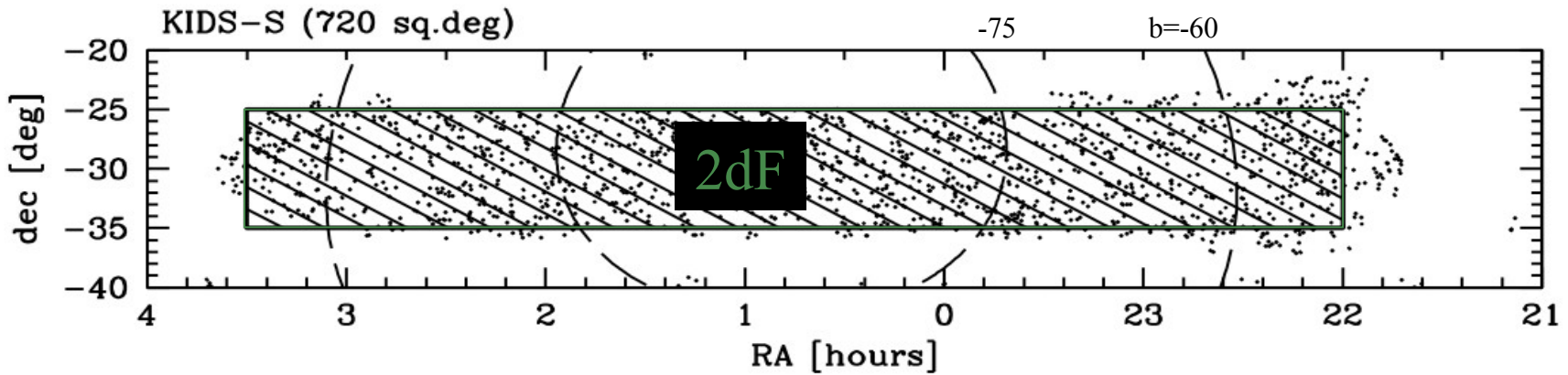
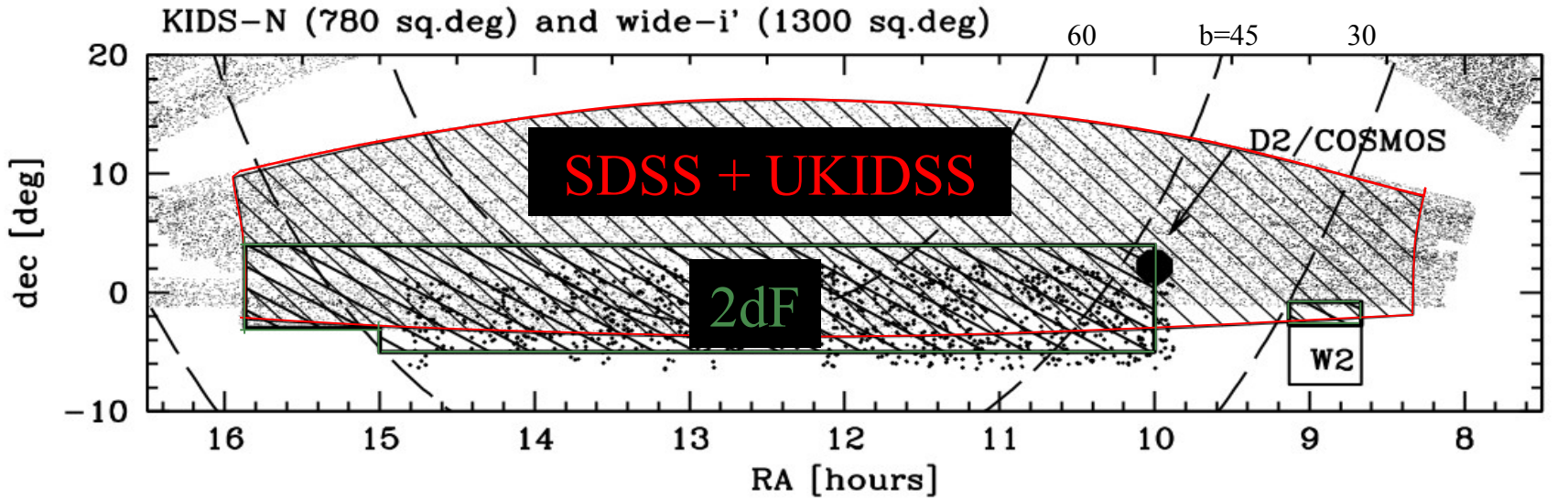


- S: SGP area
 - α 22 - 3:30h
 - δ -25 - -35°



Other data

- Spectroscopy
 - 2dF, SDSS, GAMA
- UKIDSS
- VIKING (VISTA) YZJHK
- Herschel
- Spitzer post-cryo



1500 sq.deg. in **ugriZYJHK**
 +2000 sq.deg. in **i (+UKIDSS YJHK)**

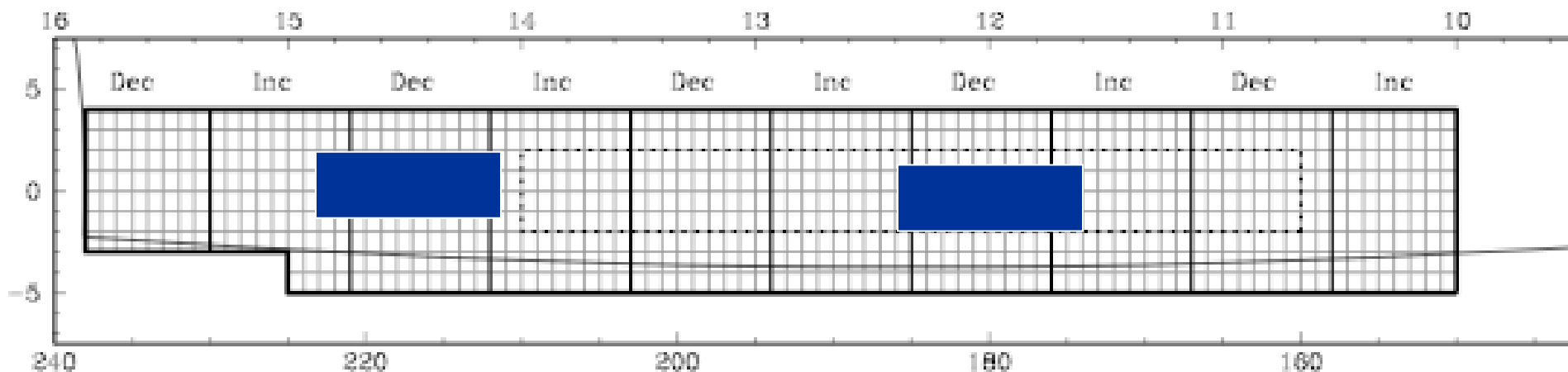


GAMA

Galaxy And Mass Assembly

- Redshift survey to $r=19.8$
 - 2,000 gals/sq.deg.
 - 140 sq.deg. Total
 - AAΩ 2008-2010
- Add to 2dF and SDSS spectra in hand !

March: 15 nights,
35000 redshifts!



H1K

- Herschel Key programme
 - 550 sq.deg. awarded:
 - 250 in KiDS-S, 150 in KiDS-N

KiDS & AstroWISE

- Environment for advanced pipelines
- db of primary data
 - Science exposures
 - Calibration
- db of secondary data:
 - Extinction map
 - IR image surveys
 - Spectroscopic surveys