

The LEGA-C Survey

ESO Public Spectroscopic Galaxy Survey with VLT / VIMOS

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CENTRAL QUESTION

How do galaxies assemble their stellar bodies?

Collection of large samples at large lookback times

- Redshift surveys
- Multi-wavelength photometric surveys
- Hubble Space Telescope imaging surveys
- Deep spectroscopic surveys?

CENTRAL QUESTION

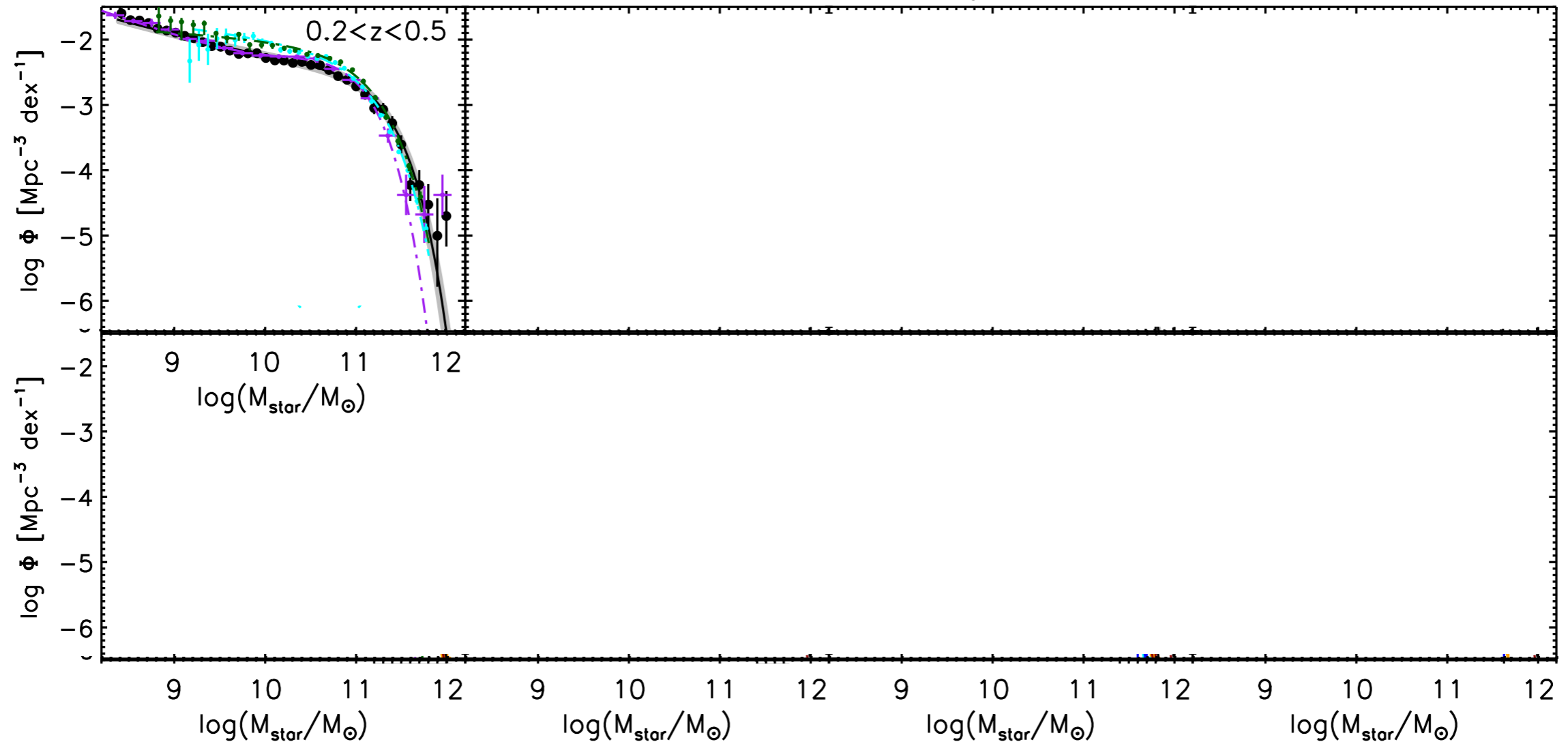
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EVOLUTION OF THE MASS FUNCTION

UltraVISTA: adapted from Muzzin et al. 2013



CENTRAL QUESTION

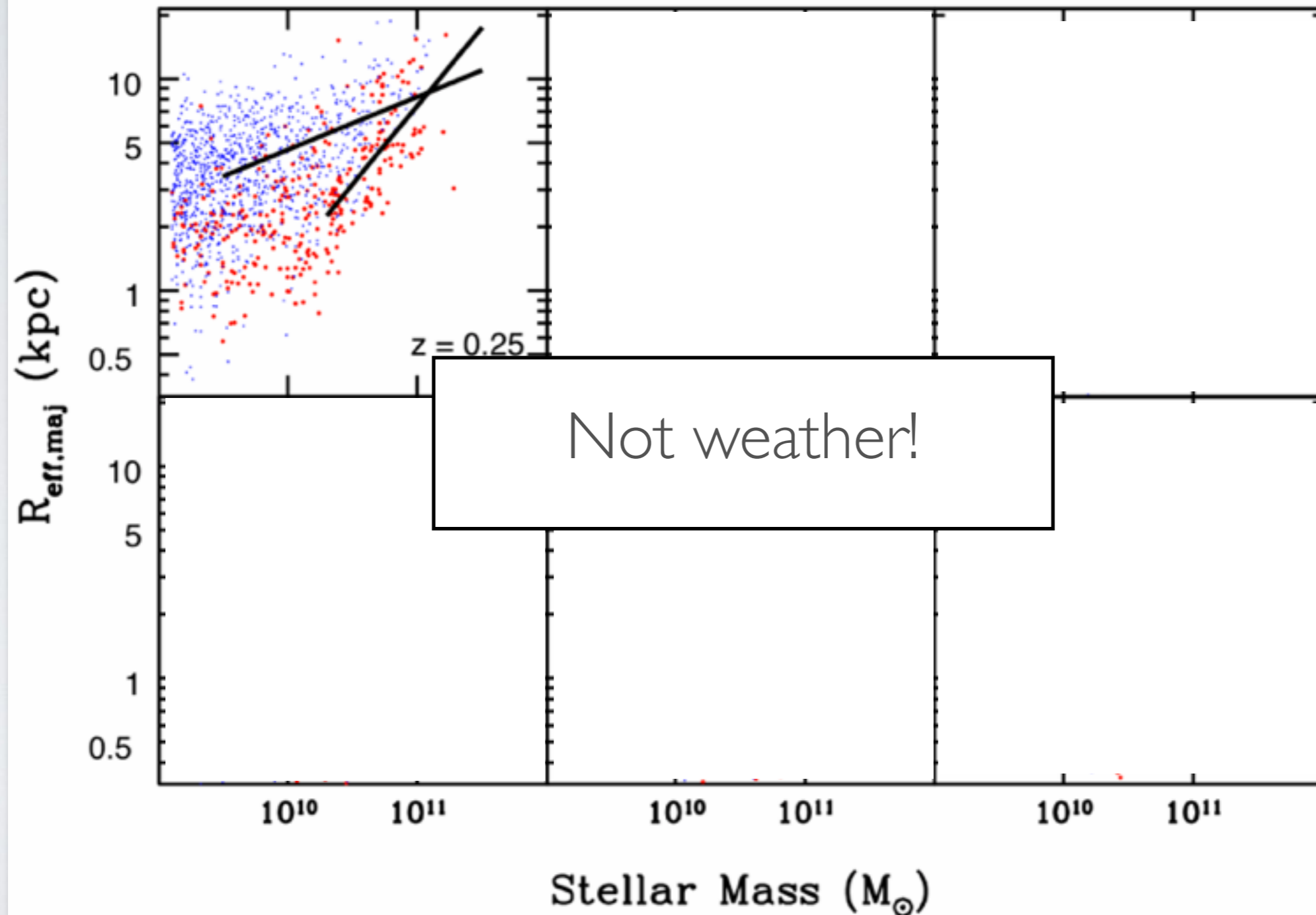
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EVOLUTION OF THE SIZE DISTRIBUTION

CANDELS + 3D-HST: van der Wel et al. 2014



WHERE WE ARE NOW

- No change in M^* (in Schechter) over 10 Gyr
- Evolution in number density
- Quenching
- Star formation inside-out
- Assembly through merging

But we don't know how individual galaxies evolve

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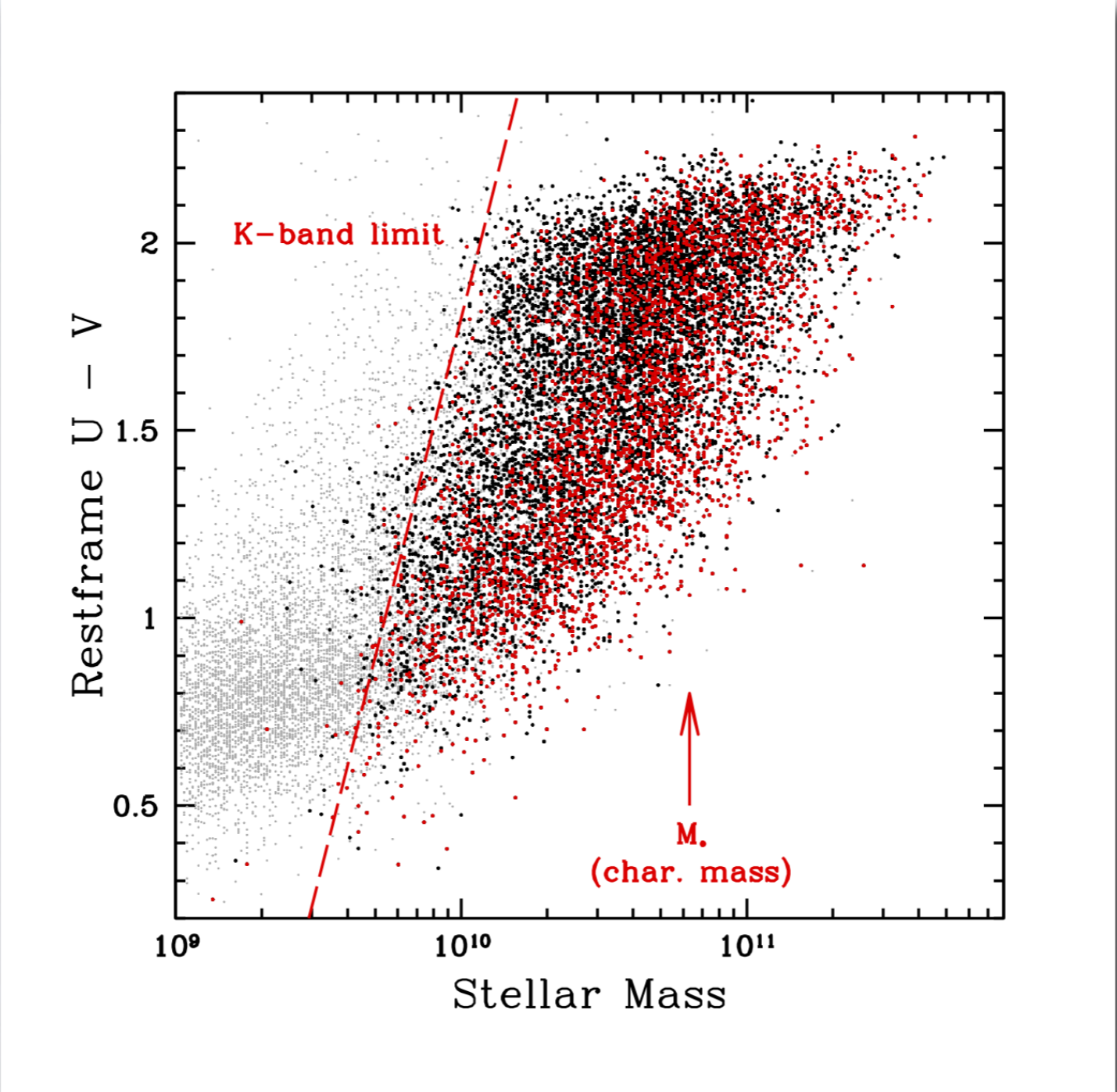
Stellar velocity dispersions
Stellar ages & chemical composition



- LEGA-C : Large Early Galaxy Astrophysics Census
- Public ESO survey at VLT / VIMOS: 128 nights
- Observations: December 2014 - Spring 2018(?)
- 1.7 square degrees in UltraVISTA-COSMOS field
- $R = 3000$, $\lambda = 6000 - 9000 \text{ \AA}$
- Primary sample 2500 galaxies: $0.6 < z < 1.0$, K-band sel.
- 20h integrations in MOS mode; typical $S/N=20/\text{\AA}$
- Yearly releases of spectra ; value added catalogs

LEGA-C

A spectroscopic galaxy survey with VLT/VIMOS

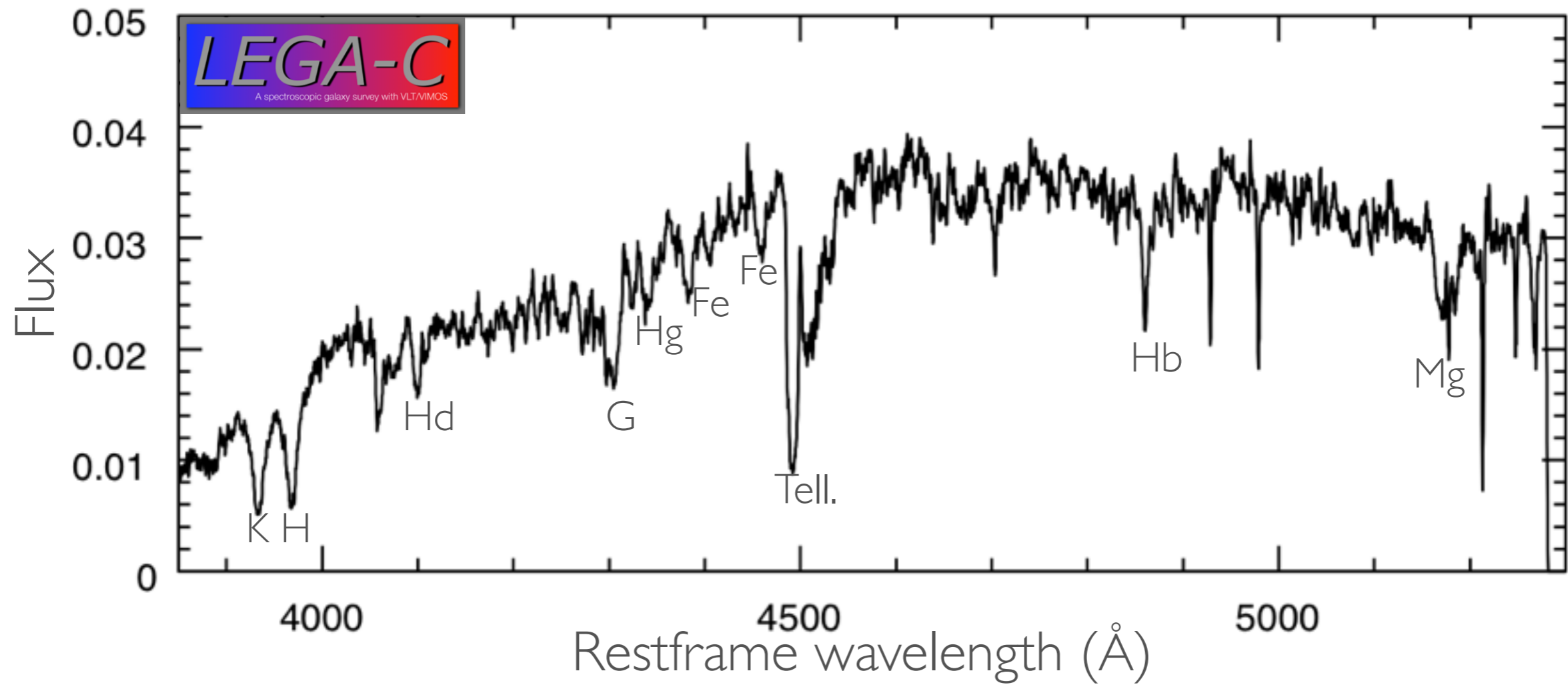


FIRST STACKED SPECTRA

$z = 0.69$

$\log(M) = 10.7$

$I(AB) = 21.2$

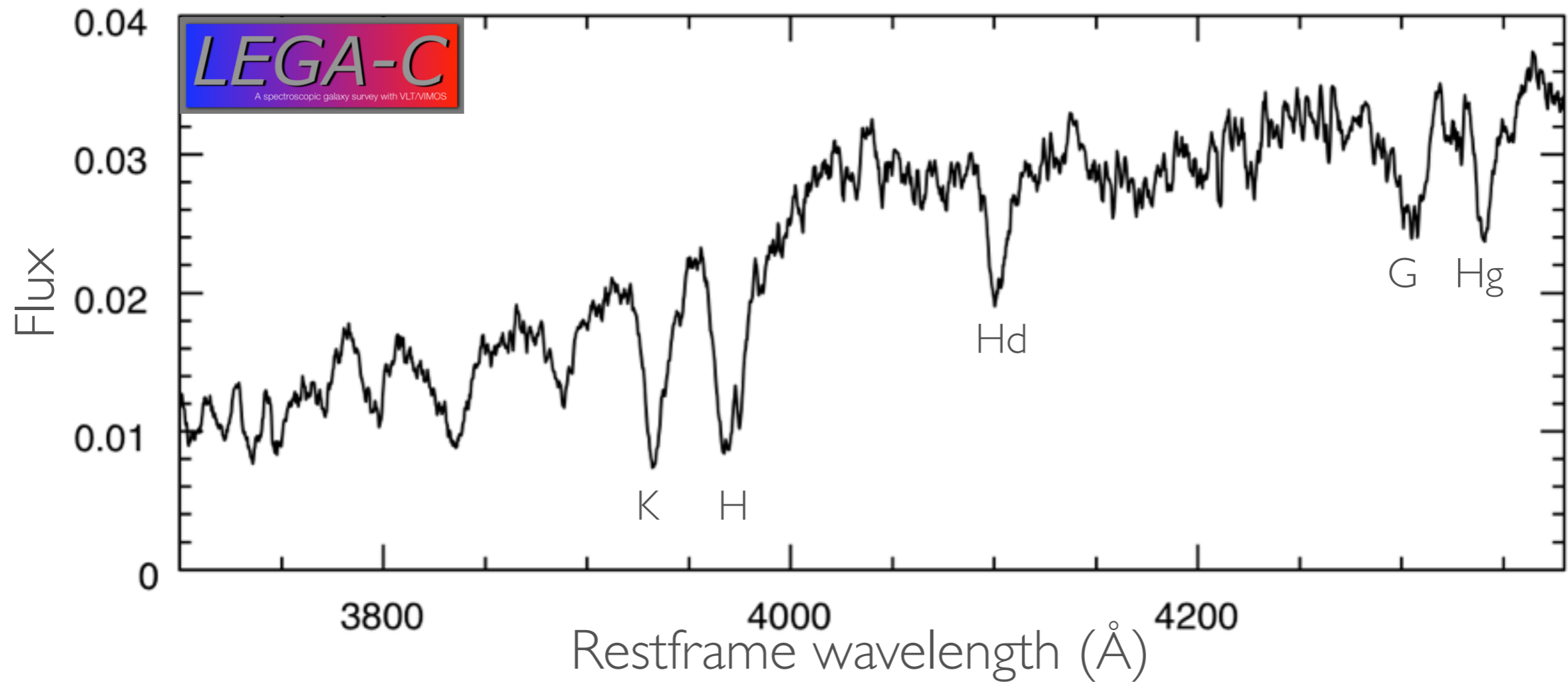


FIRST STACKED SPECTRA

$z = 0.73$

$\log(M) = 10.7$

$I(AB) = 21.1$

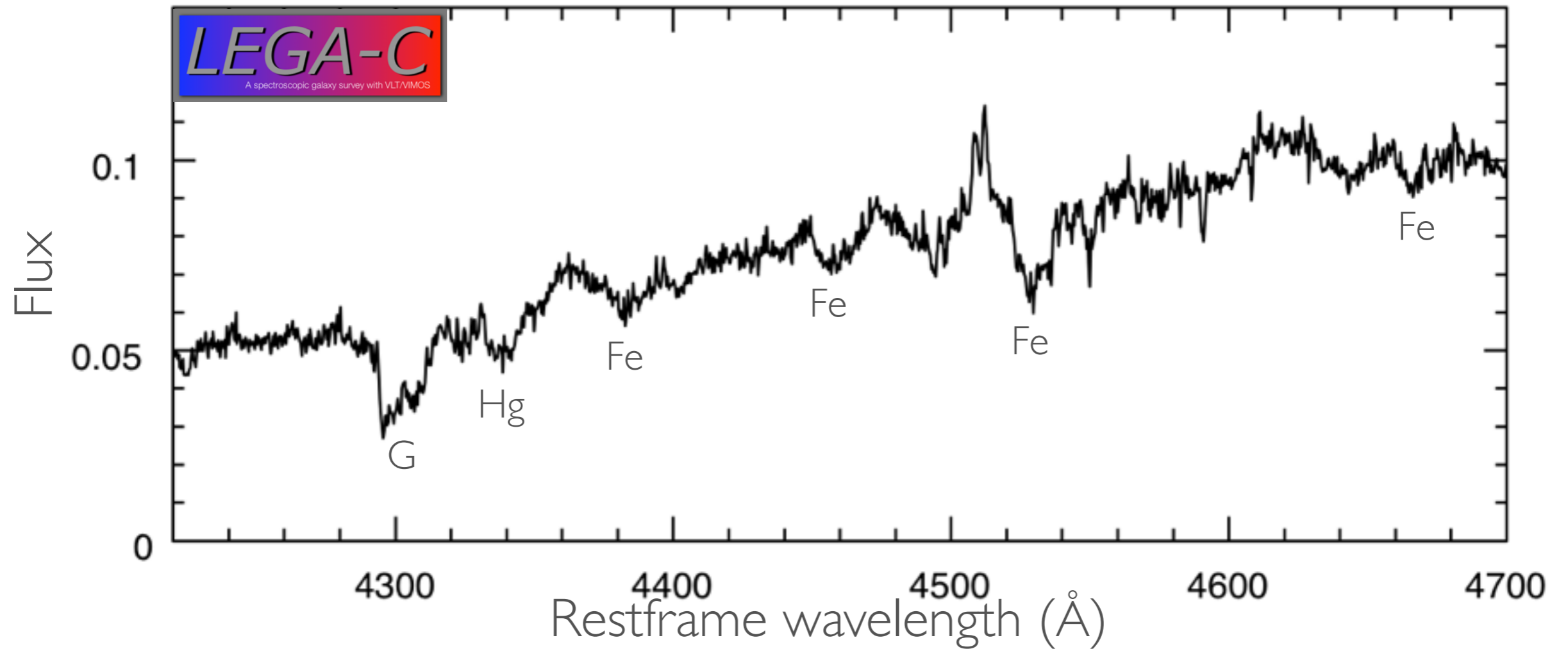


FIRST STACKED SPECTRA

$z = 0.60$

$\log(M) = 11.0$

$I(AB) = 20.6$

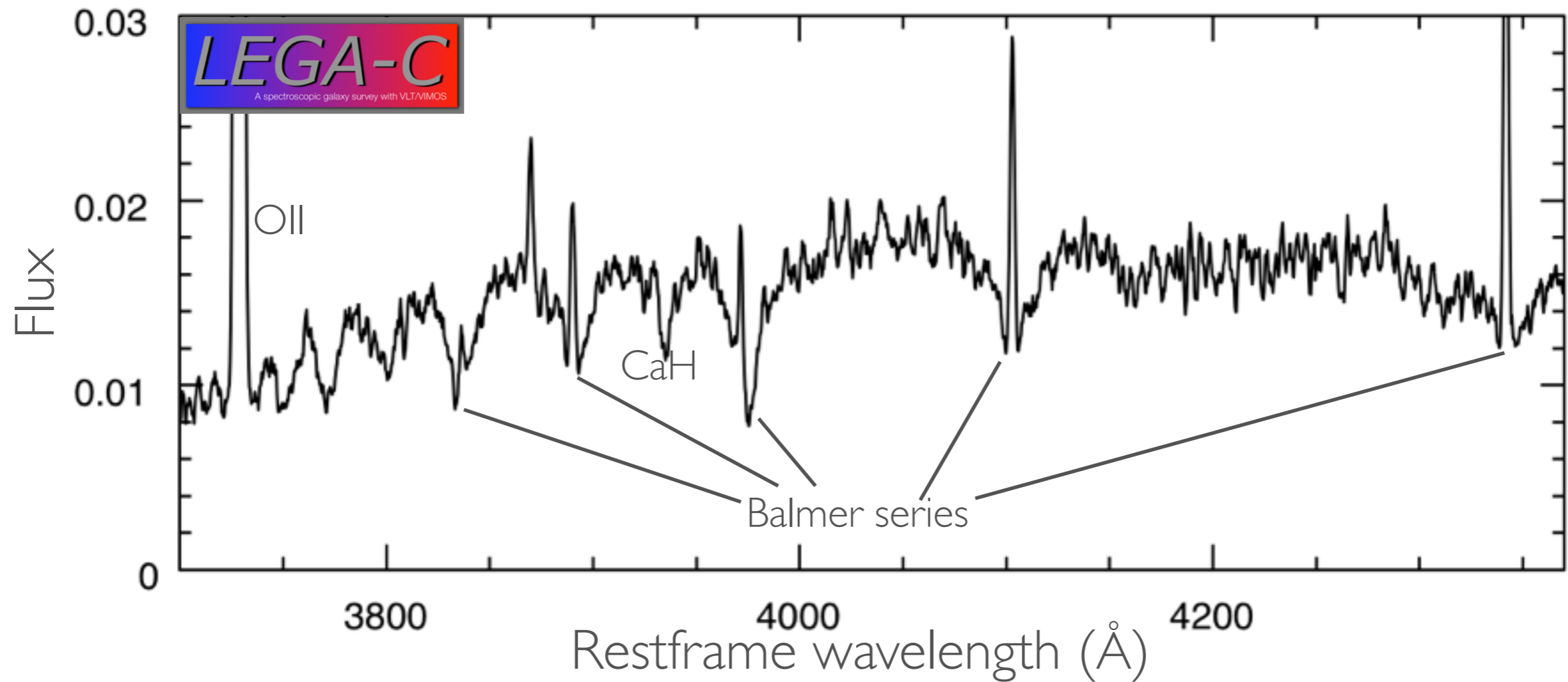


FIRST STACKED SPECTRA

$z = 0.73$

$\log(M) = 10.2$

$I(AB) = 21.0$



WHO ARE WE?

PI: Arjen van der Wel (MPIA)

Survey Manager: Kai Noeske (MPIA)

Survey Scientist: Anna Gallazzi (Arcetri)

Survey Scientist: Rachel Bezanson (Arizona)

Eric Bell (Michigan)

Gabriel Brammer (STScI)

Stephane Charlot (IA Paris)

Marijn Franx (Leiden)

Ivo Labbe (Leiden)

Michael Maseda (MPIA)

Juan Carlos Munoz (ESO)

Adam Muzzin (Leiden)

Camilla Pacifici (Yonsei) Hans-
Walter Rix (MPIA)

David Sobral (Lisbon)

Jesse van de Sande (Leiden)

Ros Skelton (Capetown)

Pieter van Dokkum (Yale)

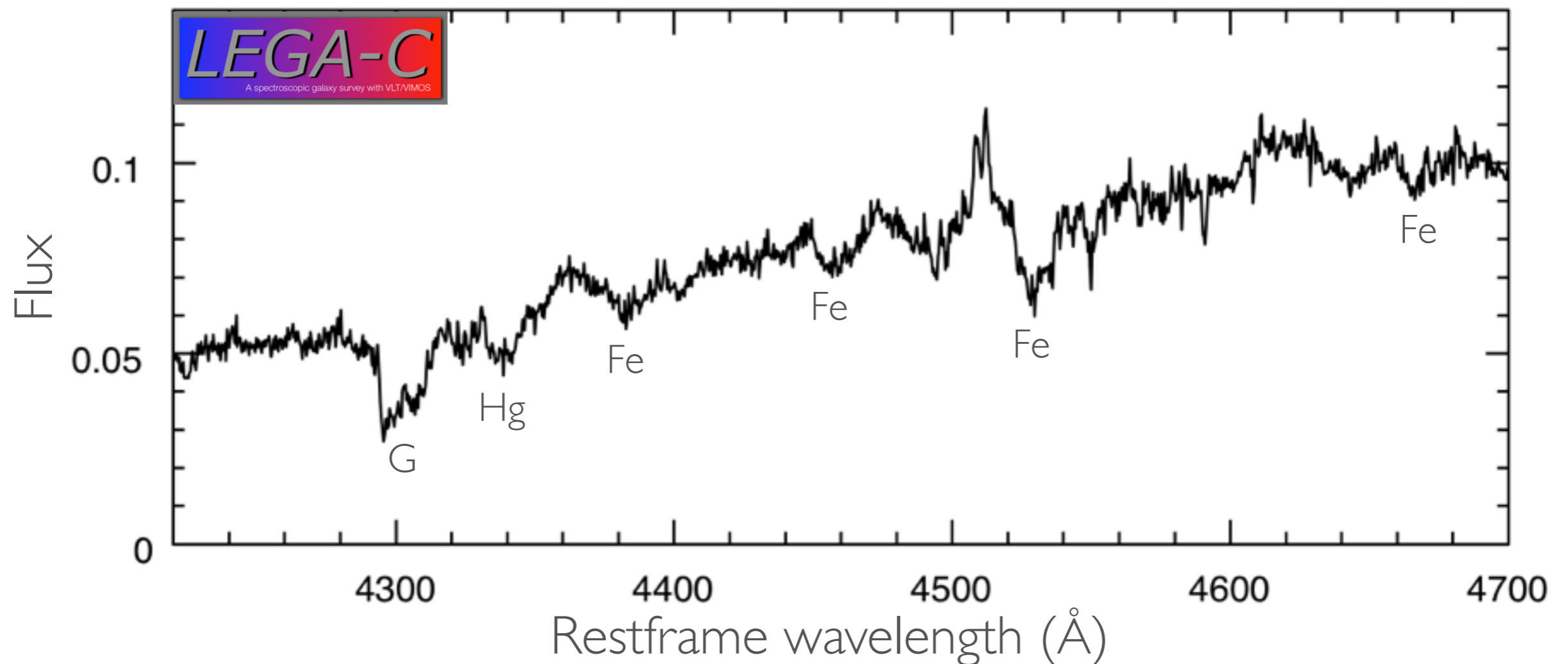
Vivienne Wild (St. Andrews)

Christian Wolf (ASU)



LEGA-C will provide

- new physical information for 1000s of galaxies at large lookback time
- new avenues to reconstruct the assembly of stellar bodies



Resolved stellar kinematics at $z = 1$

van der Wel & van der Marel 2008

