

INTERNAL STRUCTURE OF THE $z \sim 2$ GALAXY POPULATION

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OUTLINE

I. Where are ...

the $z=2$ data?

II. How to find...

intrinsic shapes?

Summary & Future Works

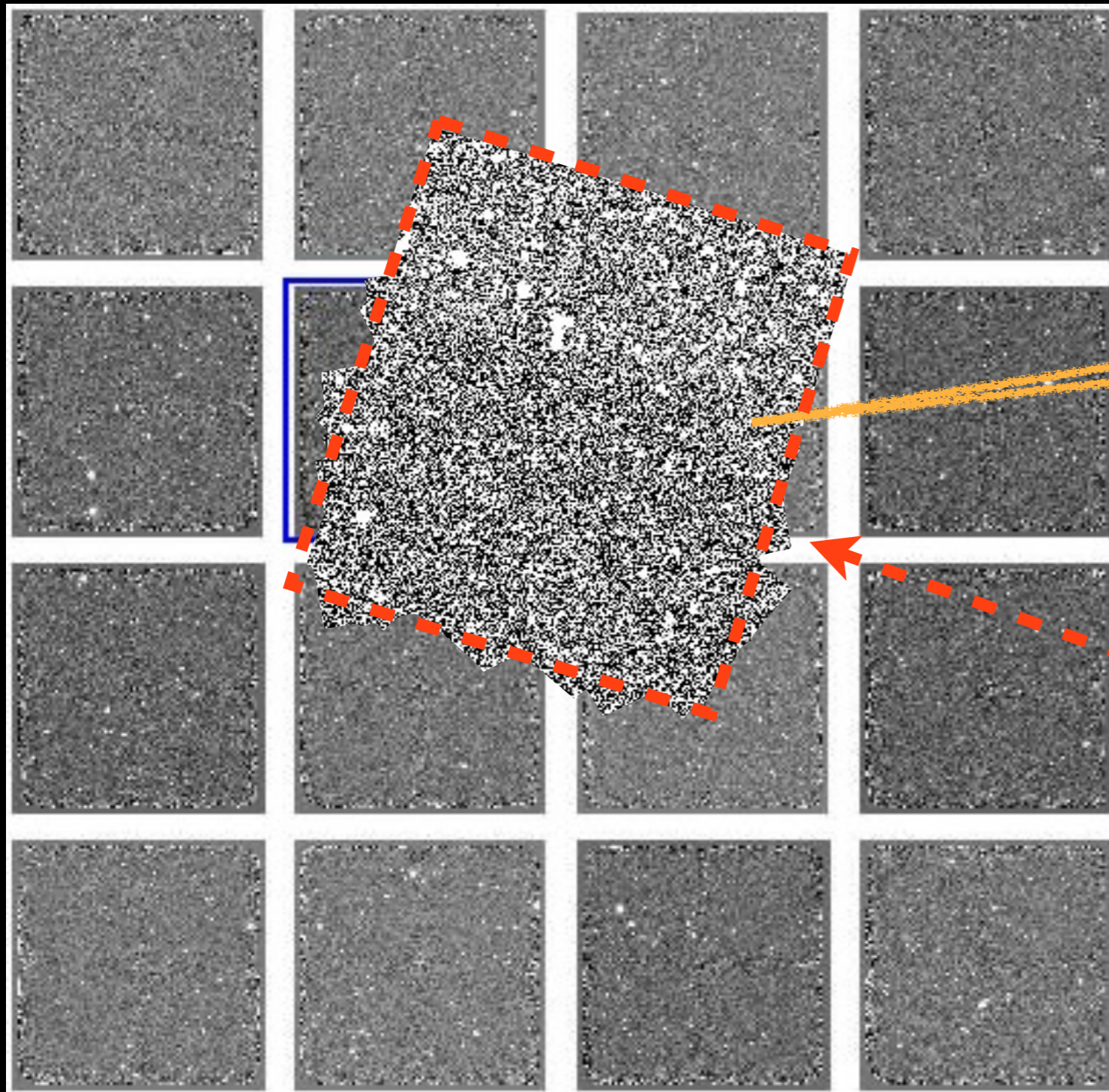
DATA

- HST WFC3 (CANDELS)
- VLT HAWK-I



HST v.s. VLT

Deep
Resolution
Near-IR
Wide

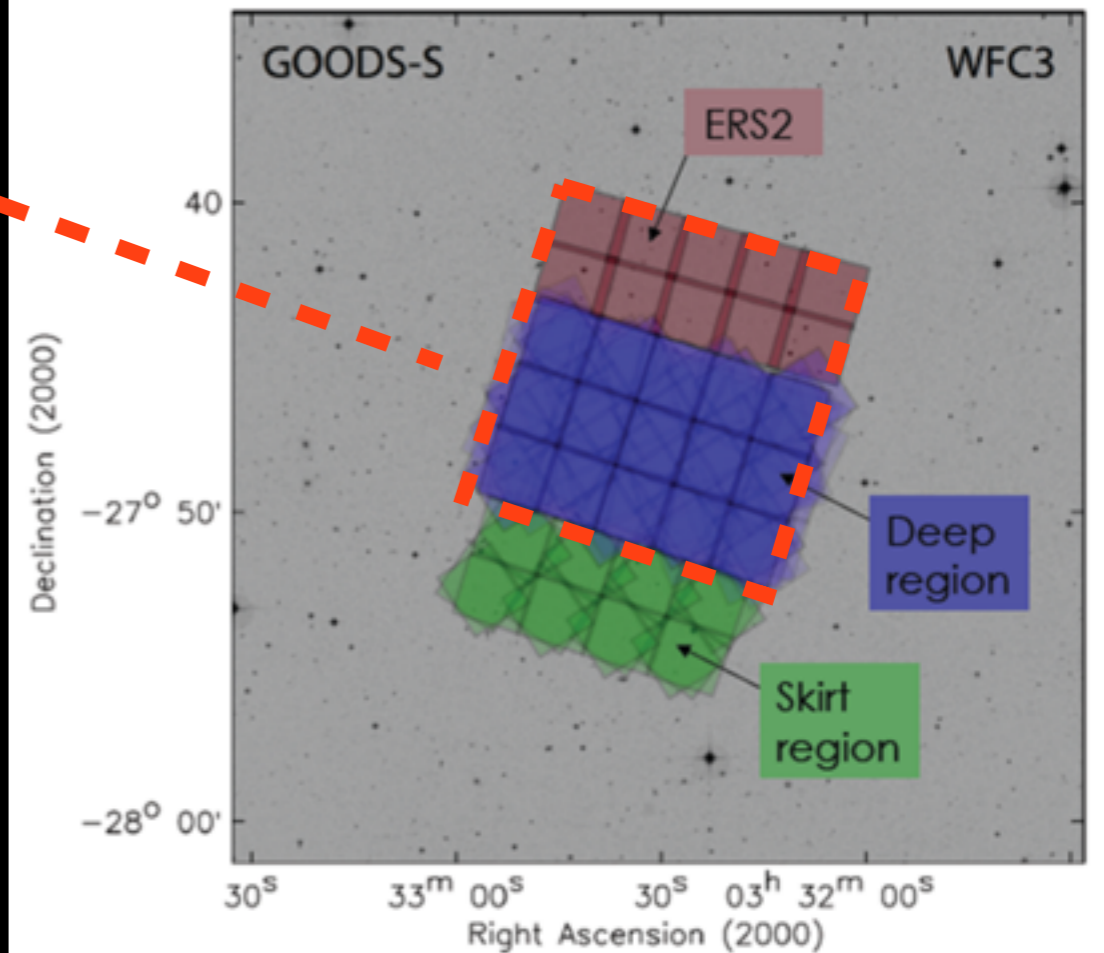


VLT
HAWK-I
K-band

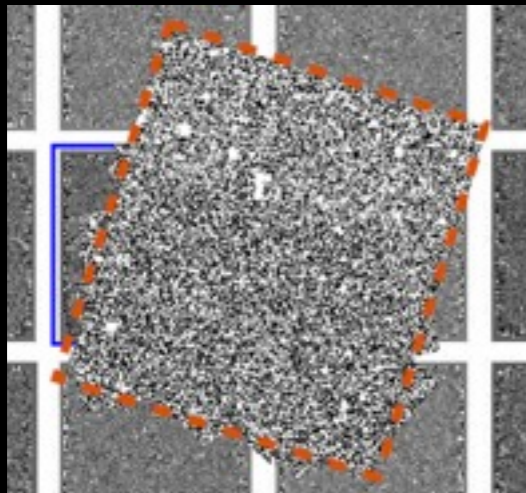
HST
WFC3
H-band

CANDELS

Cosmic Assembly Near-infrared Deep Extragalactic Legacy Survey



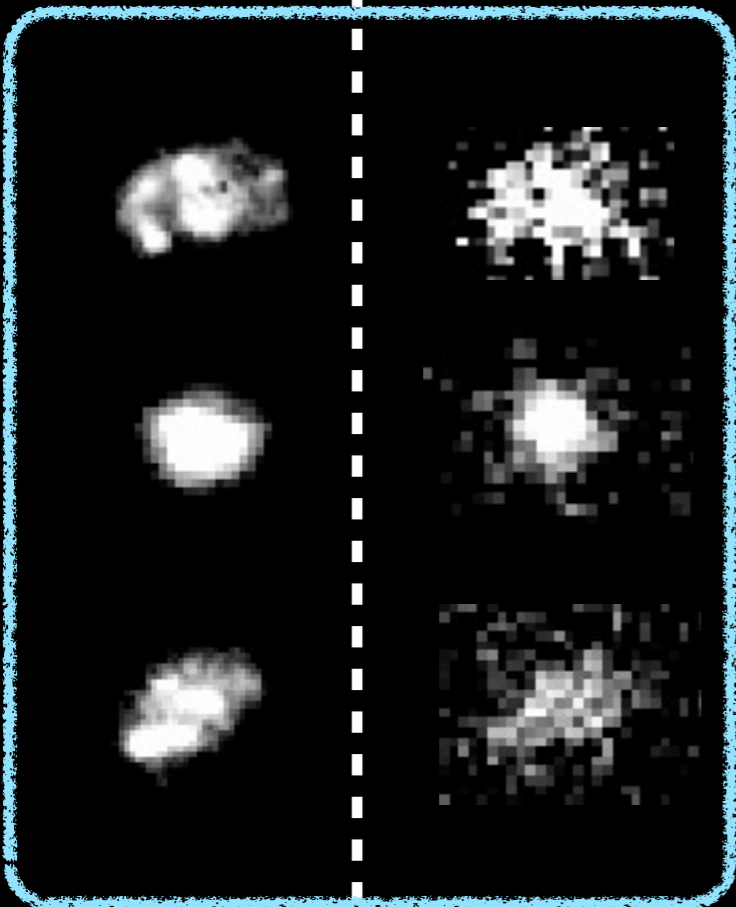
Comparison



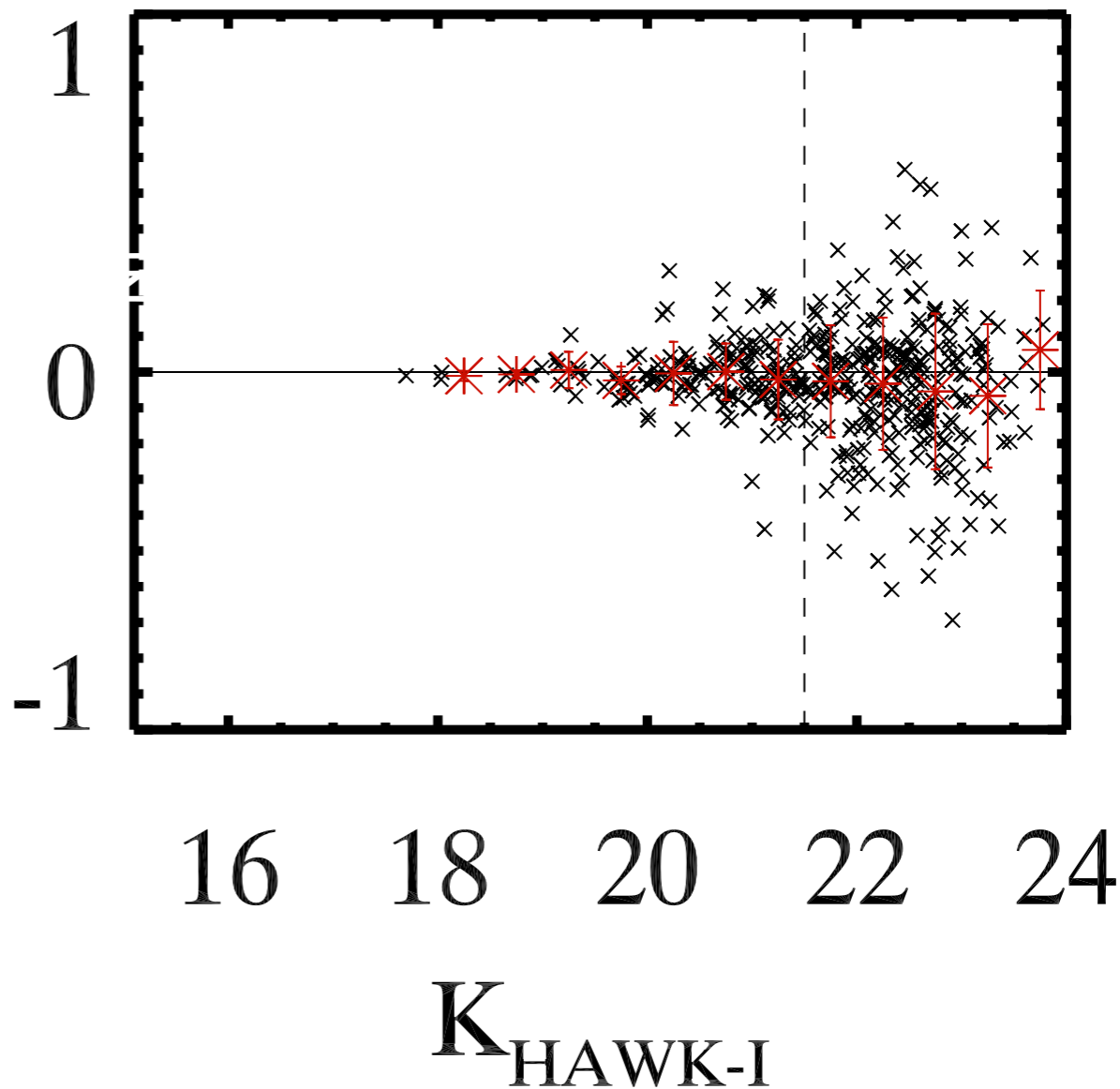
HST
WFC3

VLT
HAWK-I

$z \sim 2$

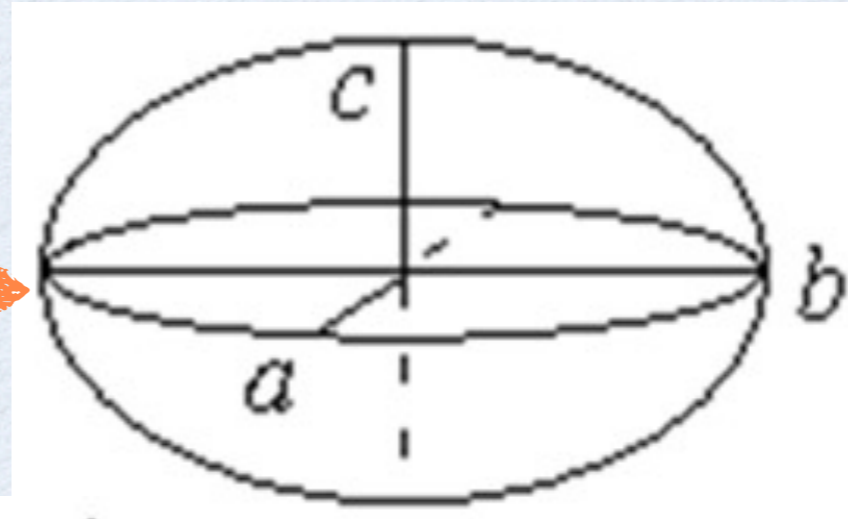


$Q_{K, \text{HAWK-I}} - Q_{F160W, \text{HST}}$



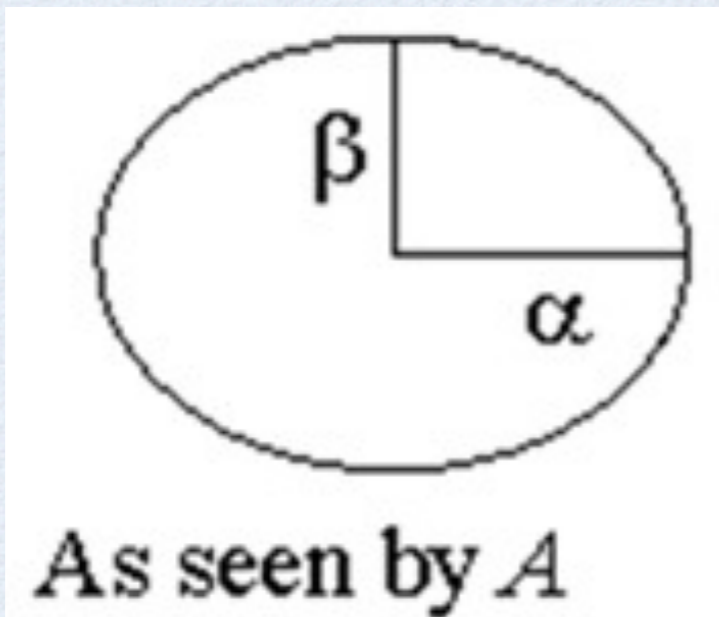
AXIS-RATIO

3D: $q_{\text{intrinsic}} = c/a$



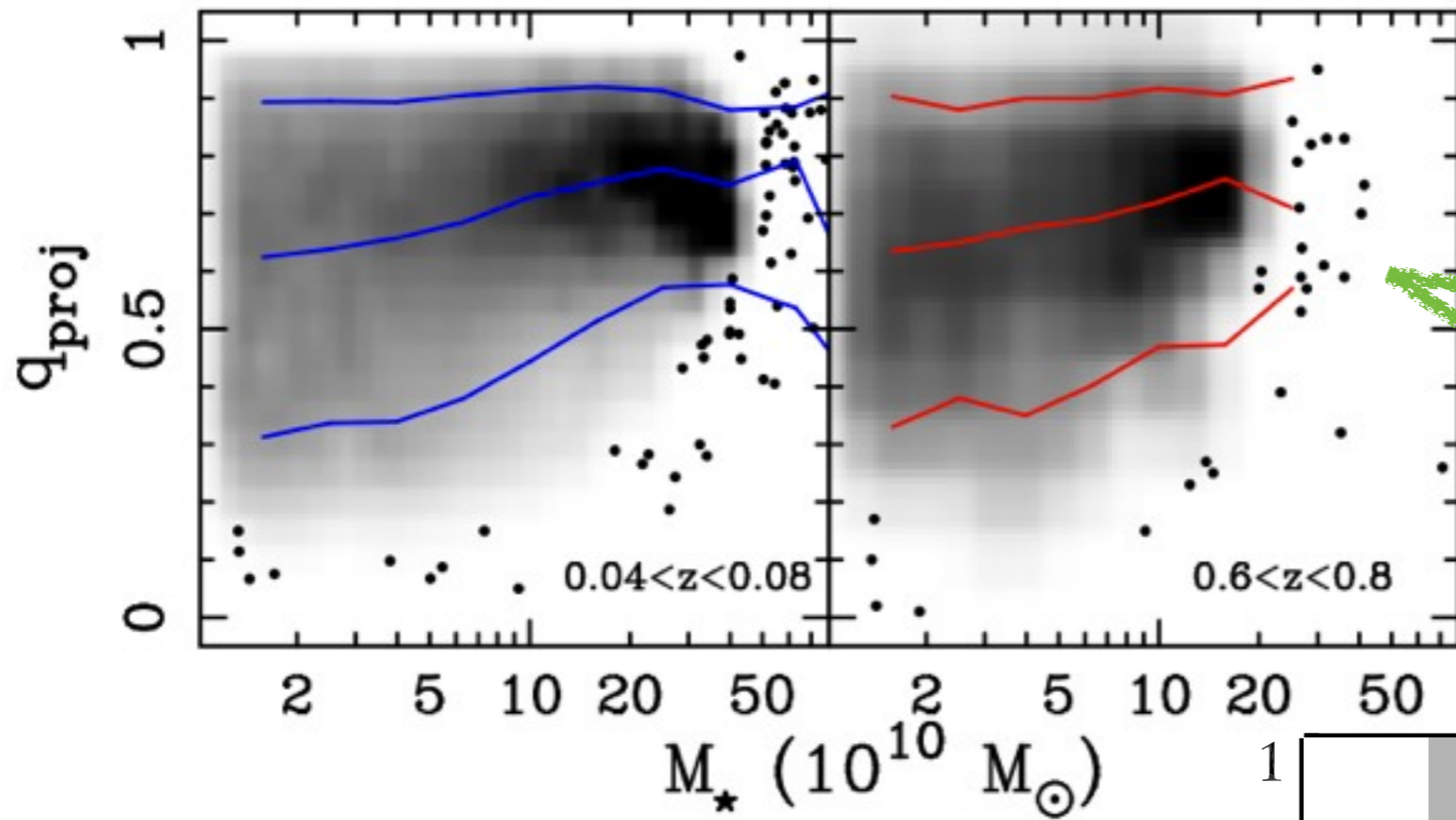
Observer A

Oblate: $a=b > c$



2D: $q_{\text{projected}} = \beta/\alpha$

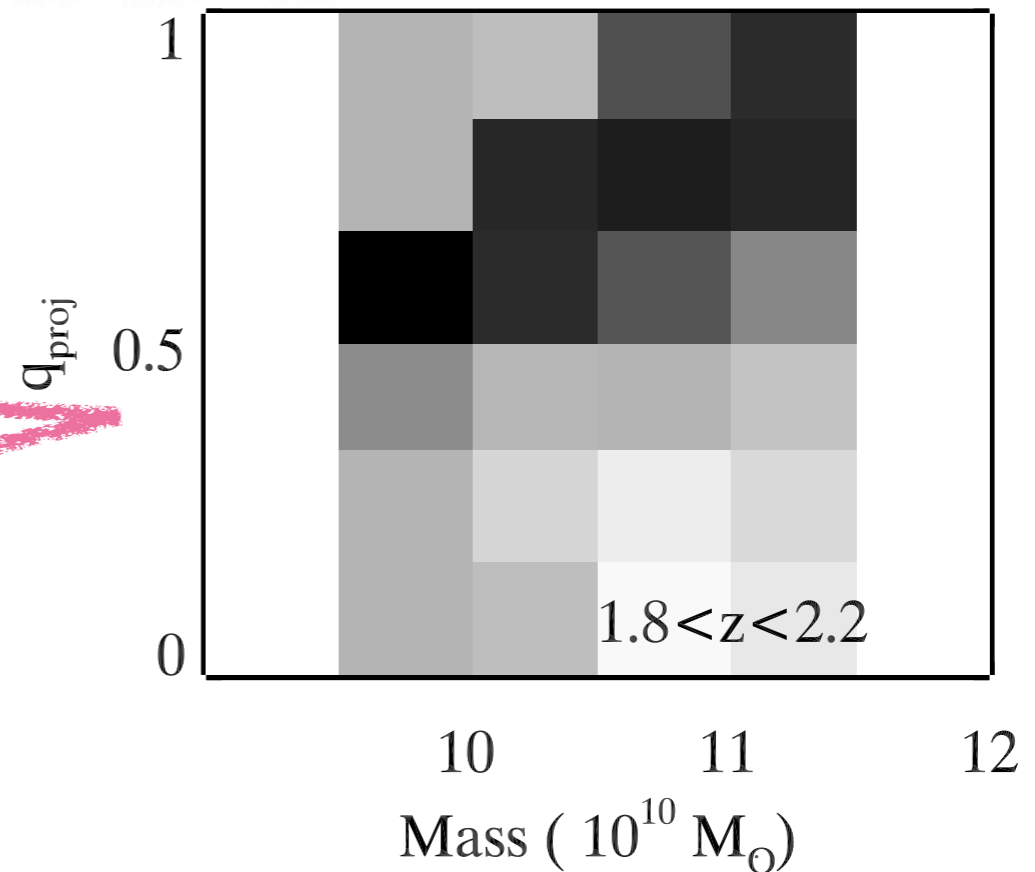
Stellar Mass



Holden et al. 2011

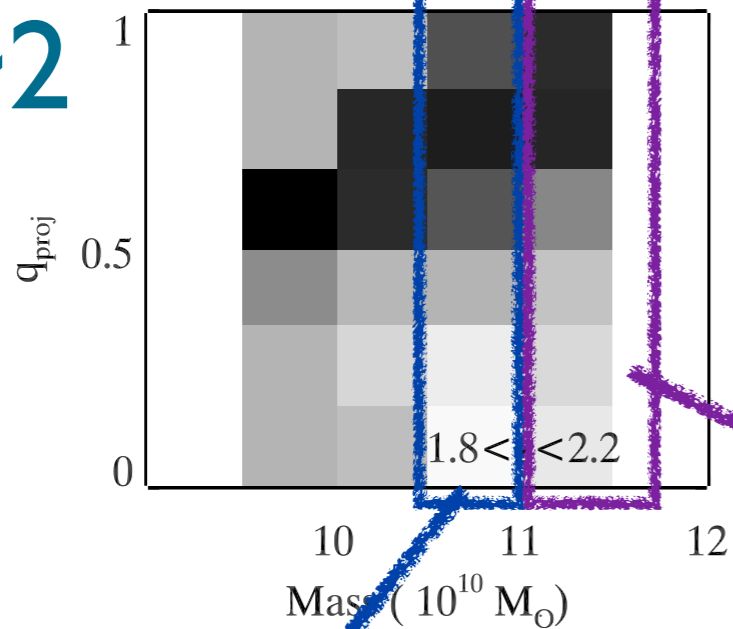
Massive
Galaxies
are rounder

VLT HAWK-I
K-band $z \sim 2$

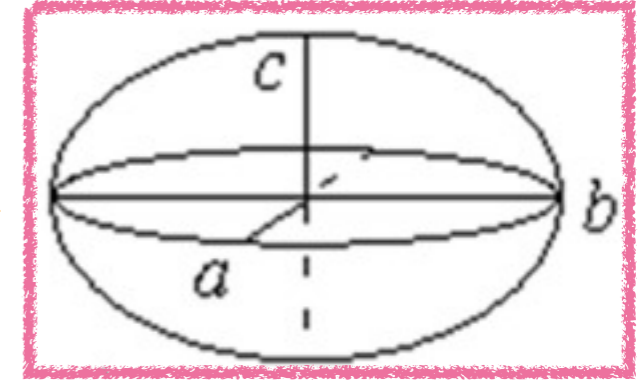


Data Fitting

$z \sim 2$



$$q_{\text{intrinsic}} = c/a$$

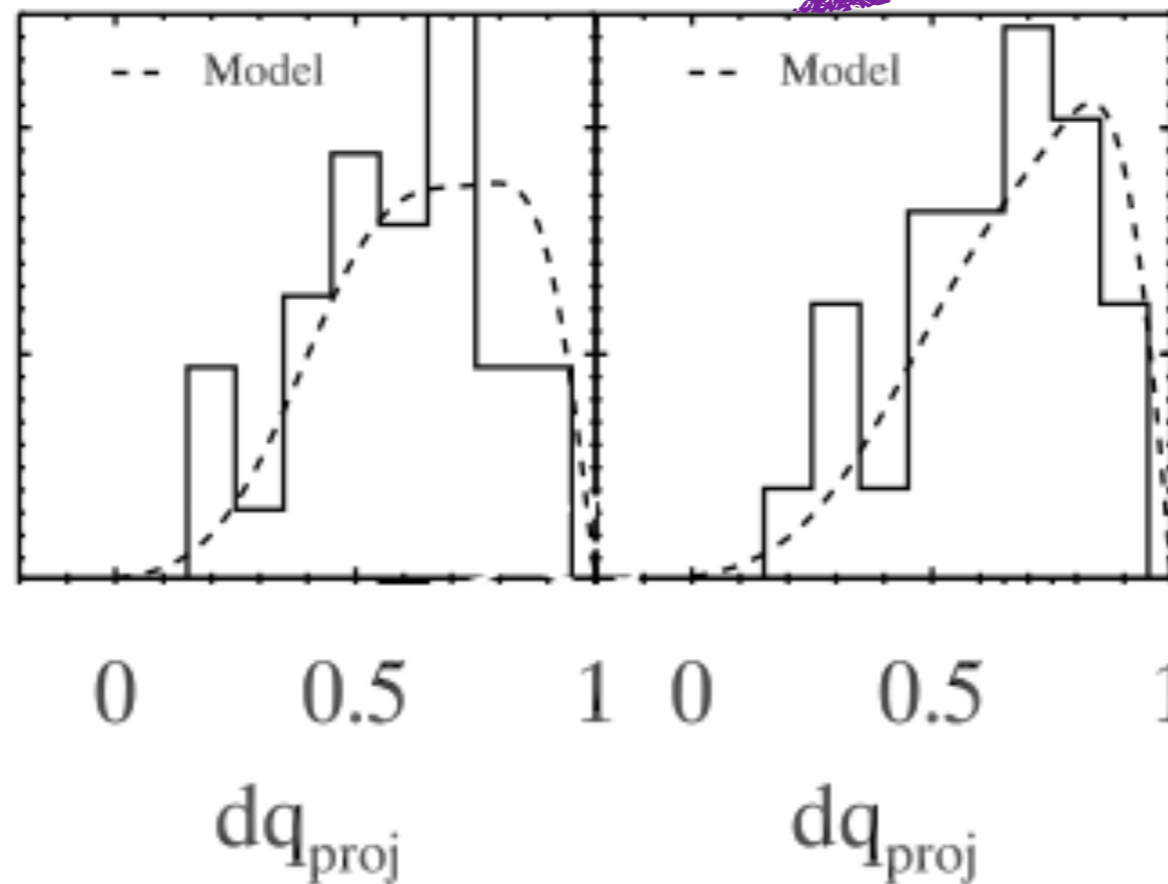


Oblate model
 $a = b > c$

$10.5 < \log M < 11.5$

Maximum Likelihood

$$q_{\text{int}} = 0.44 \pm 0.14$$



$11 < \log M < 12$

Maximum Likelihood

$$q_{\text{int}} = 0.50 \pm 0.20$$

SUMMARY & FUTURE

I. Where are the $z=2$ data?

1. HST/WFC3 (CANDLES)
2. VLT/HAWK-I



Future Works

III. How to find intrinsic 3D shapes?

1. 2D \rightarrow 3D projections reconstruction
2. Maximum likelihood method
3. $z\sim 2$ galaxies have similar shapes as₁₀ nearby galaxies

THANK YOU!

Arjen van der Wel
Hans-Walter Rix
& You!!!

