

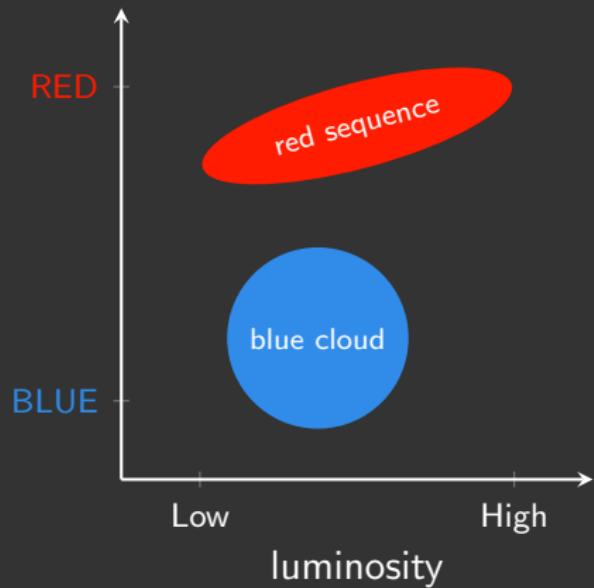
Environmental effects at $z < 0.2$: Groups

Katarina Kraljic

with

Marie Treyer, Stéphane Arnouts, Sylvain de la Torre
(Laboratoire d'Astrophysique de Marseille)

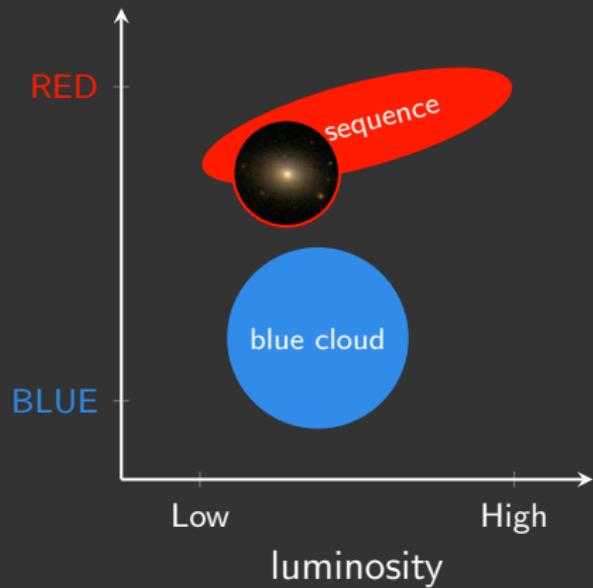
Christophe Pichon, Yohan Dubois, Clotilde Laigle
(Institute d'Astrophysique de Paris)
and the GAMA team



e.g. Strateva et al. 2001

Baldry et al. 2004

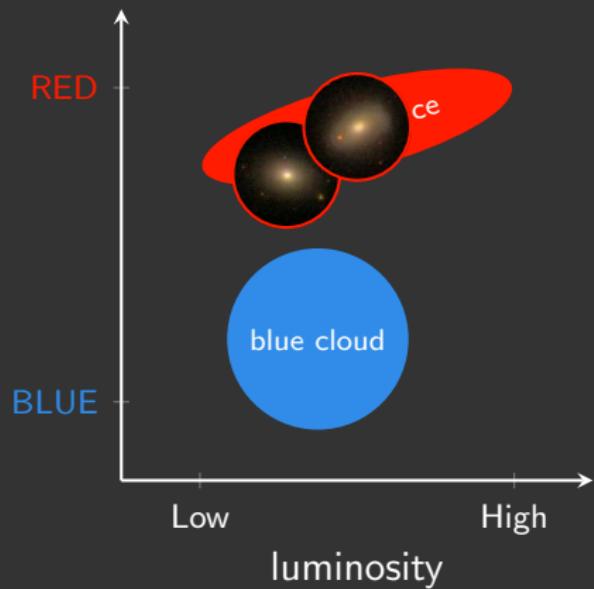
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Baldry et al. 2004

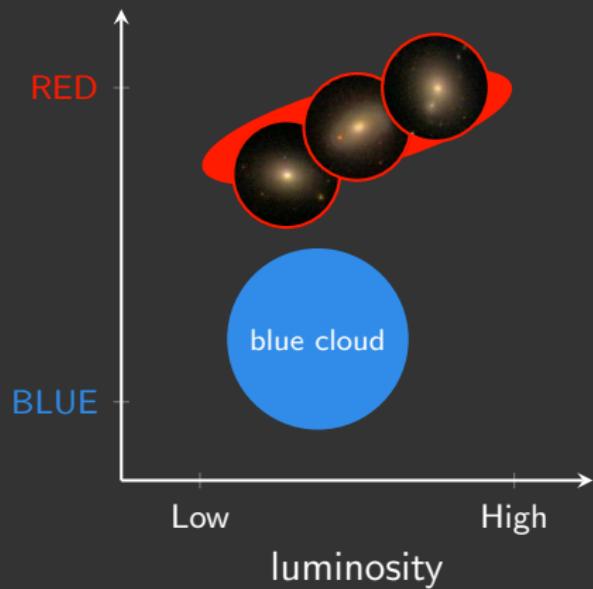
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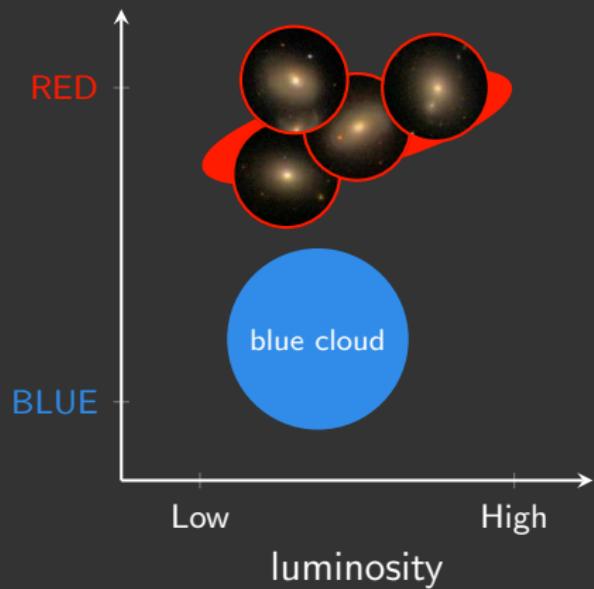
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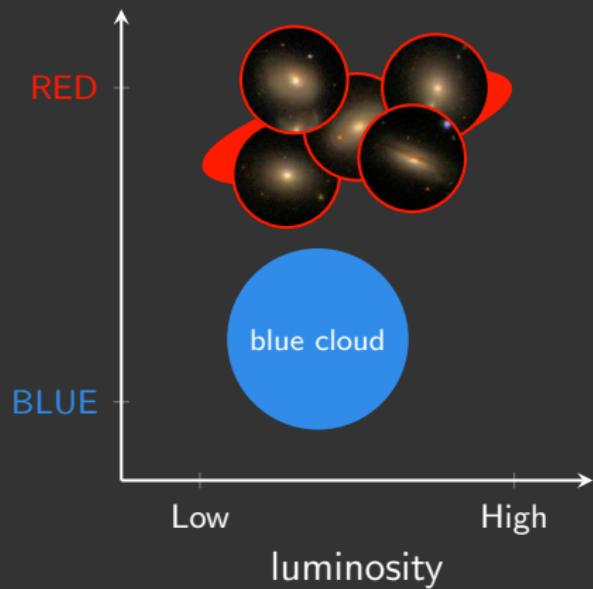
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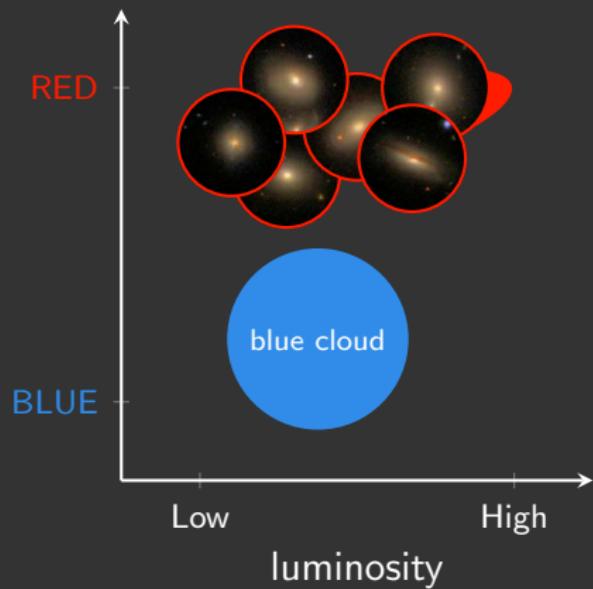
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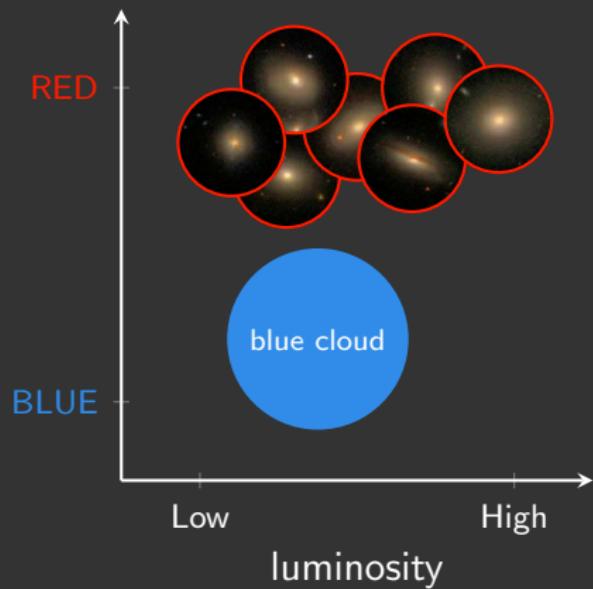
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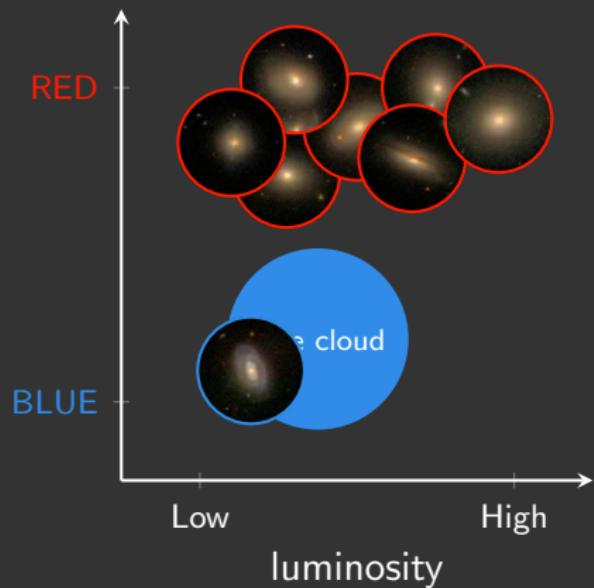
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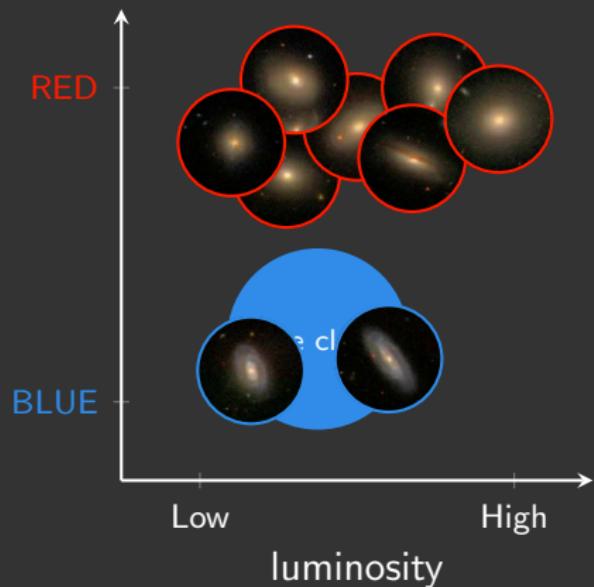
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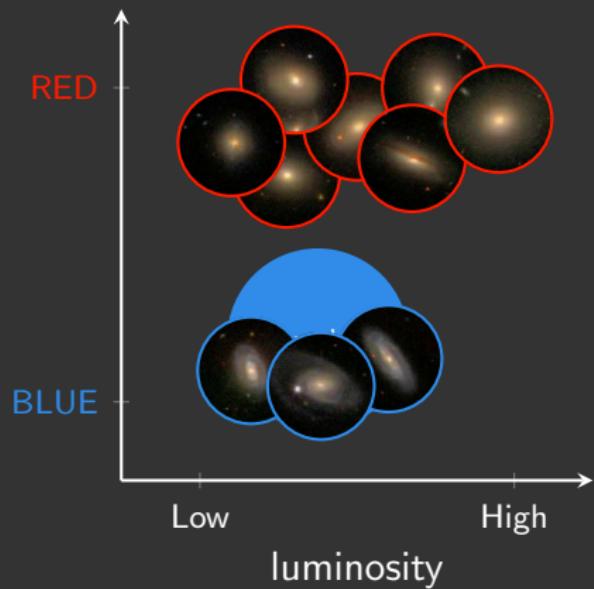
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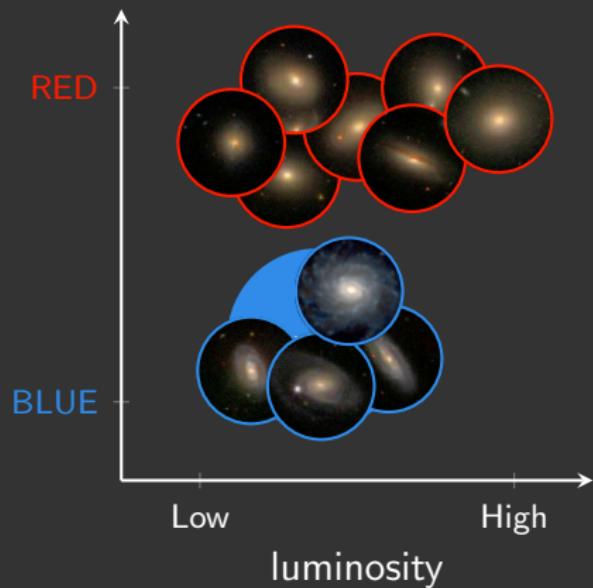
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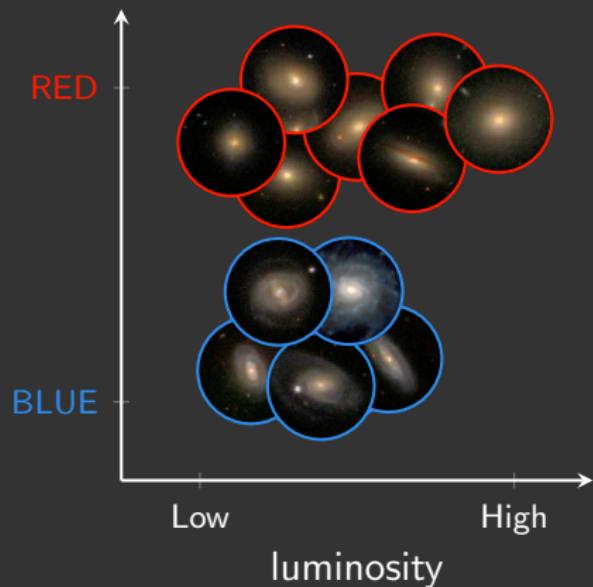
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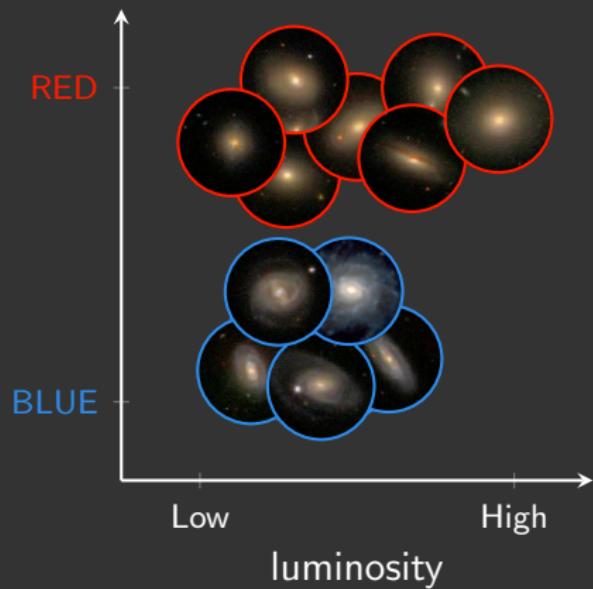
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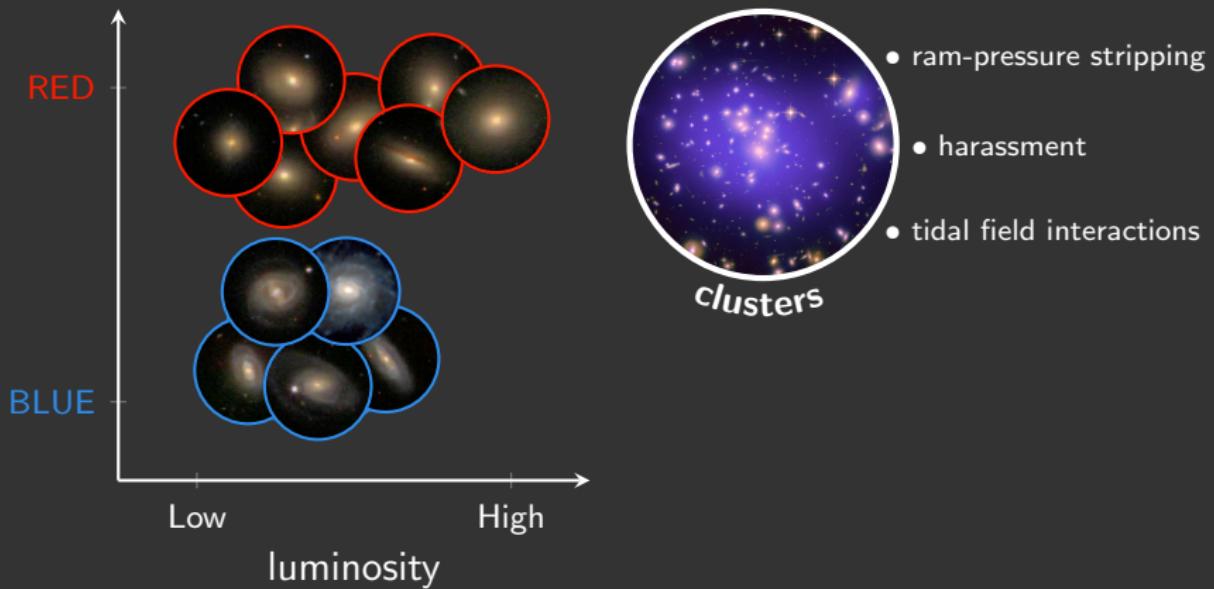
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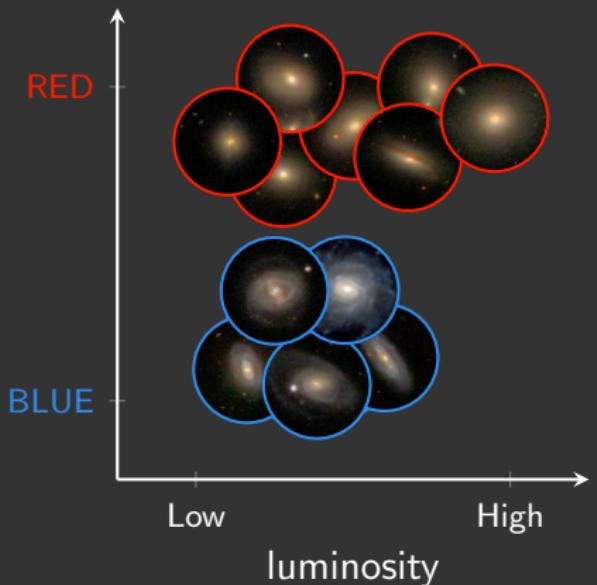
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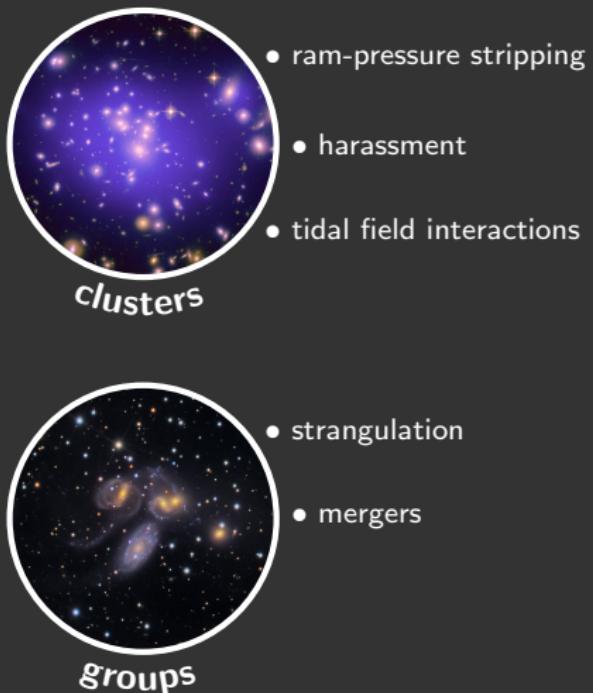
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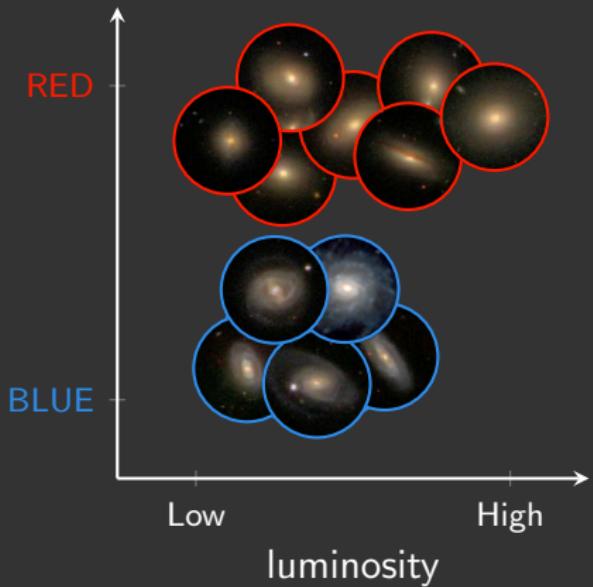


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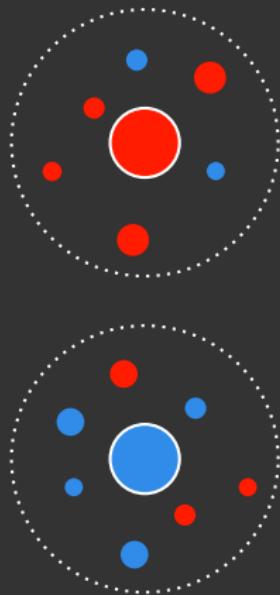




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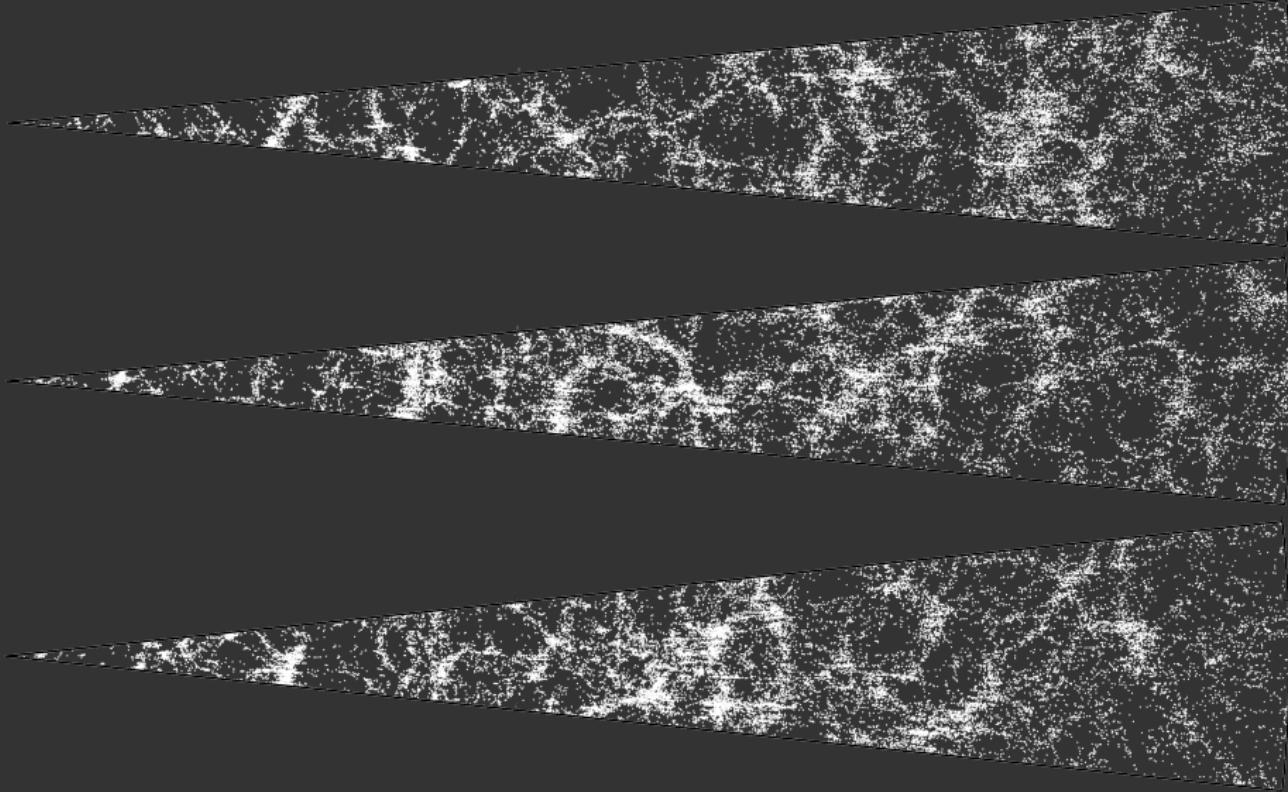
...



cf Hearn et al. 2015

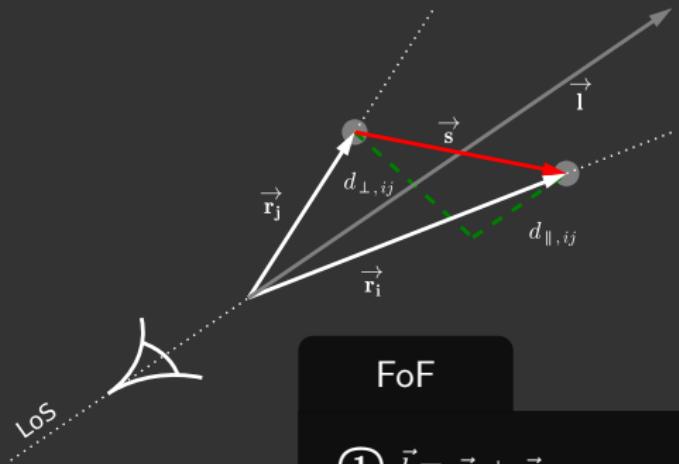
Data

Galaxy And Mass Assembly



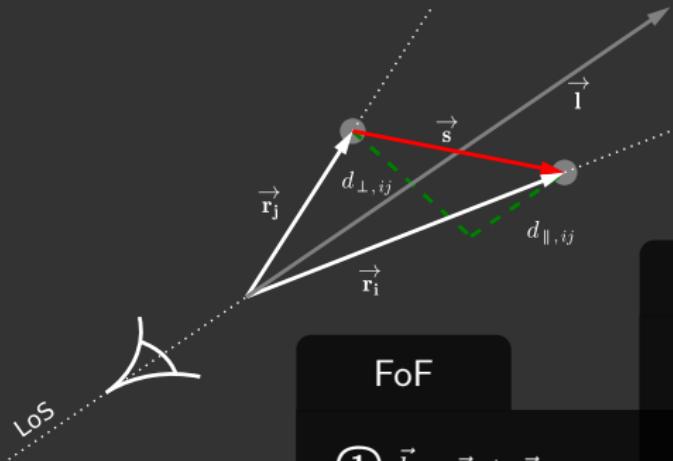
GAMA

- 3 fields: G09, G12, G15
- 180 deg²
- spectroscopy (98% complete sampling)
- multi- λ photometry
- $r < 19.8$ mag (extinction corrected)
- $z \lesssim 0.25$



FoF

- ① $\vec{l} \equiv \vec{r}_i + \vec{r}_j$
- ② $\vec{s} \equiv \vec{r}_i - \vec{r}_j$
- ③ $d_{\parallel,ij} = \frac{\vec{s} \cdot \vec{l}}{\|\vec{l}\|}$
- ④ $d_{\perp,ij} = \sqrt{\vec{s} \cdot \vec{s} - d_{\parallel,ij}^2}$



Linking

FoF

$$\textcircled{1} \quad \vec{l} \equiv \vec{r}_i + \vec{r}_j$$

$$\textcircled{2} \quad \vec{s} \equiv \vec{r}_i - \vec{r}_j$$

$$\textcircled{3} \quad d_{\parallel,ij} = \frac{\vec{s} \cdot \vec{l}}{\|\vec{l}\|}$$

$$\textcircled{4} \quad d_{\perp,ij} = \sqrt{\vec{s} \cdot \vec{s} - d_{\parallel,ij}^2}$$

$$\textcircled{1} \quad d_{\perp,ij} < b_{\perp} \bar{r}_{ij}$$

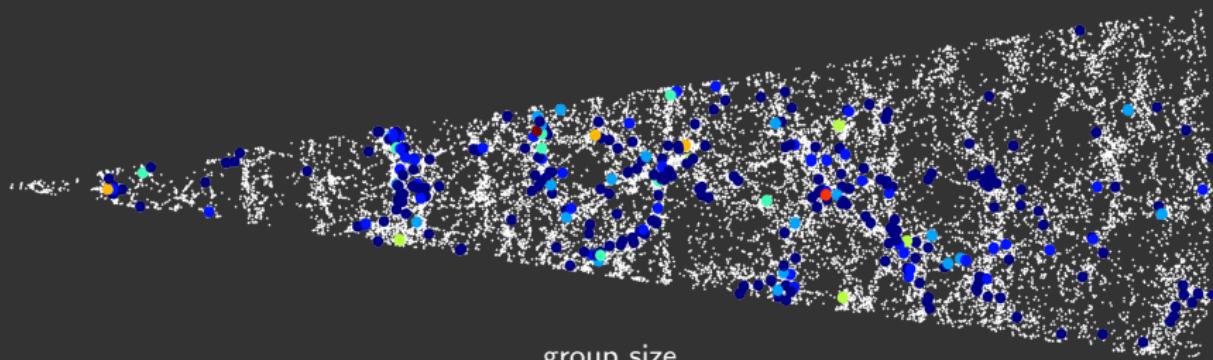
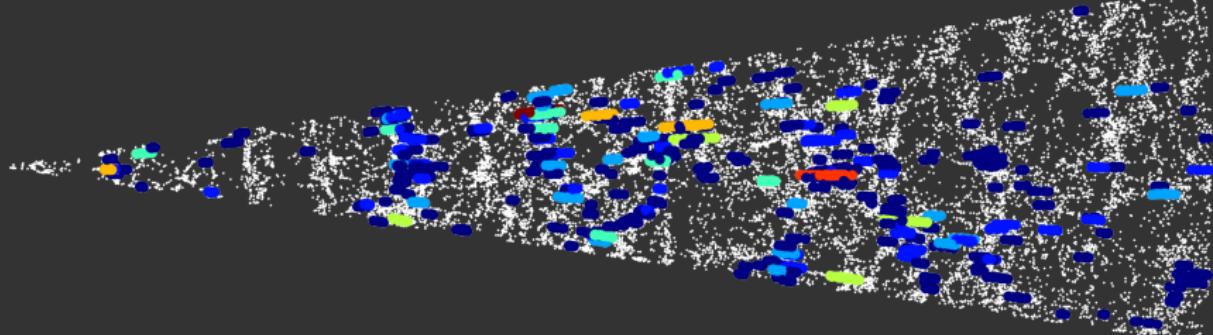
$$\textcircled{2} \quad d_{\parallel,ij} < b_{\parallel} \bar{r}_{ij}$$

$$\textcircled{3} \quad \bar{r}_{ij} = \frac{1}{2} \left(n_i^{-1/3} + n_j^{-1/3} \right)$$

Group catalogue

Method

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group size



5-7

8-10

11-14

15-19

20-24

25-29

30-54

>=55

Groups

- $0.02 < z < 0.2 \text{ & } M_\star > 10^{10.2} M_\odot$
- 7900 groups
- 23000 group galaxies (40%)
- 36000 lone galaxies (60%)

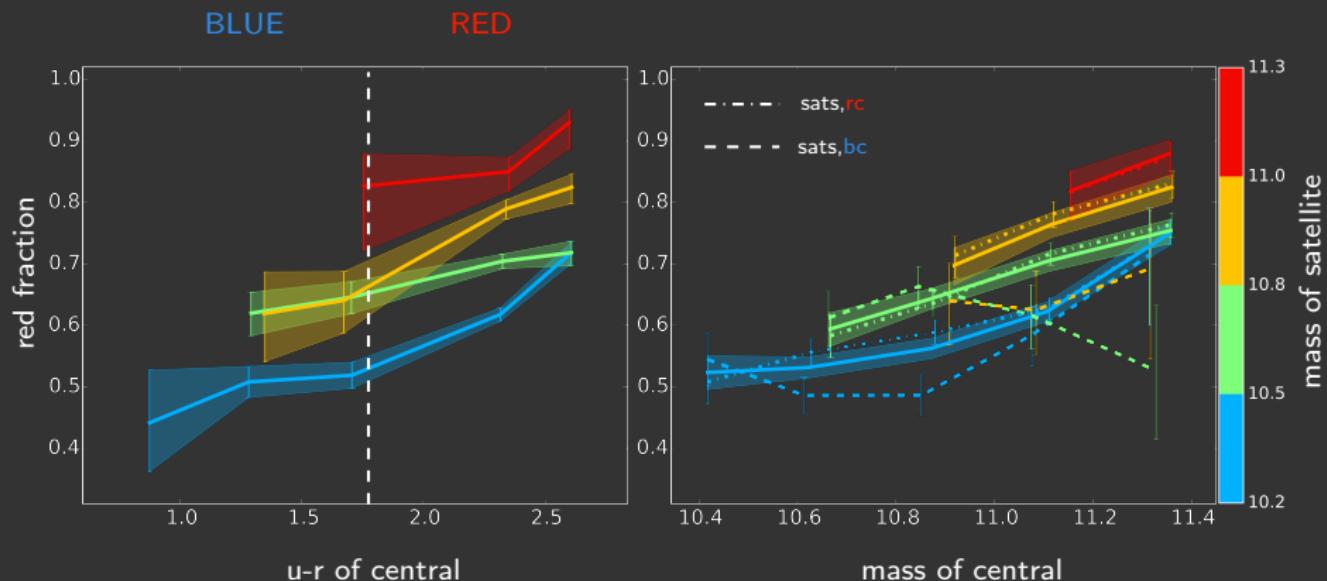
group size

A horizontal color bar with a gradient from blue to red. It is divided into eight segments by vertical lines, with labels below each segment: 5-7, 8-10, 11-14, 15-19, 20-24, 25-29, 30-54, and >=55.

Results

Red fractions

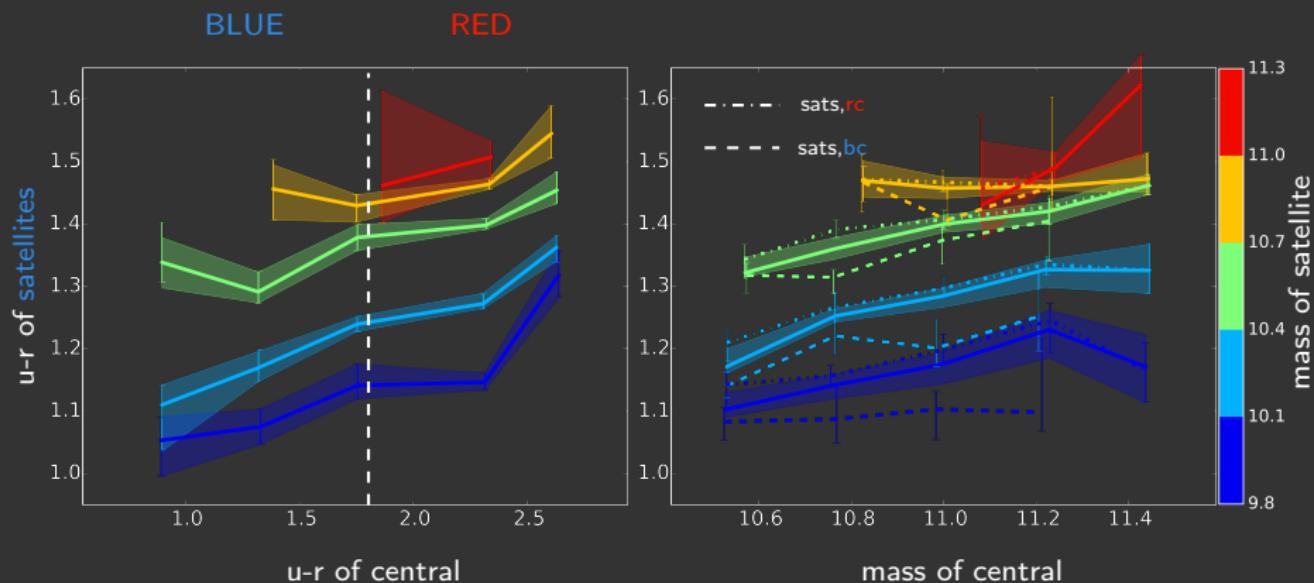
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Results

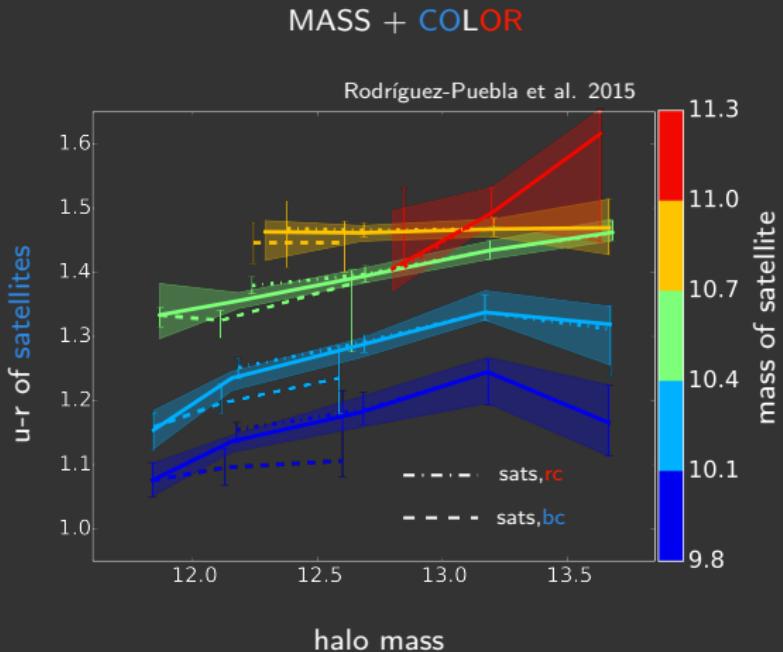
Median color

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Results

Stellar-to-Halo-Mass-Ratio



Quenching

- red fraction (quenching efficiency) in groups > field
- red fraction (quenching efficiency) of satellites around blue centrals > field

→ satellite group quenching
(cf Knobel et al. 2015)

Conformity

- red fraction around red centrals > around blue centrals
(cf Weinmann et al. 2006)
- conformity extends to the blue satellites

→ coeval group evolution

Local environment: Treyer, Kraljic et al., in prep.

Global environment: Kraljic, Arnouts et al., in prep.