

# Environmental effects at $z < 0.2$ : Groups

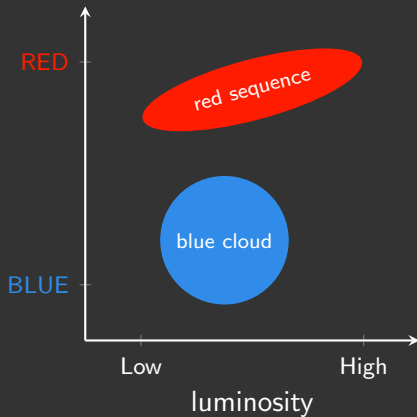
**Katarina Kraljic**

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)

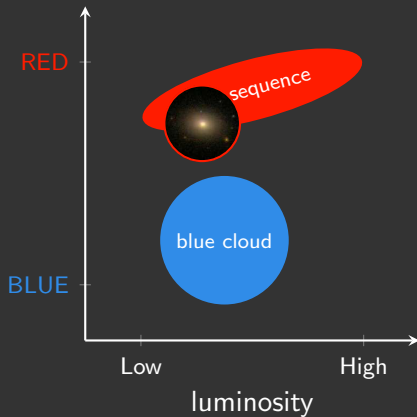
and the GAMA team



e.g. Strateva et al. 2001

Baldry et al. 2004

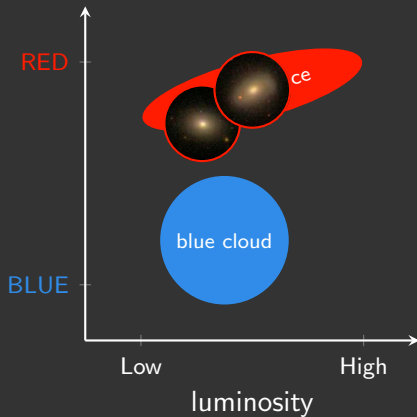
...



e.g. Strateva et al. 2001

Baldry et al. 2004

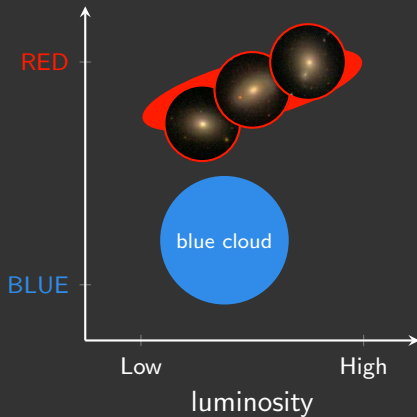
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Baldry et al. 2004

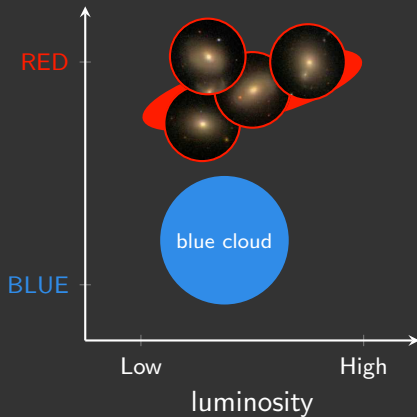
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Baldry et al. 2004

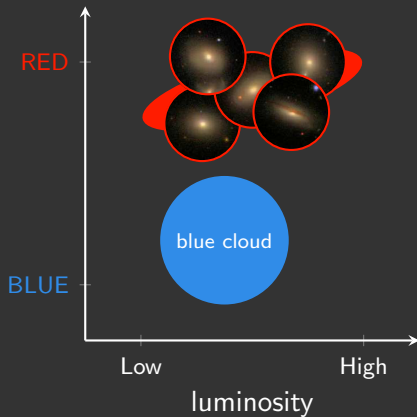
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Baldry et al. 2004

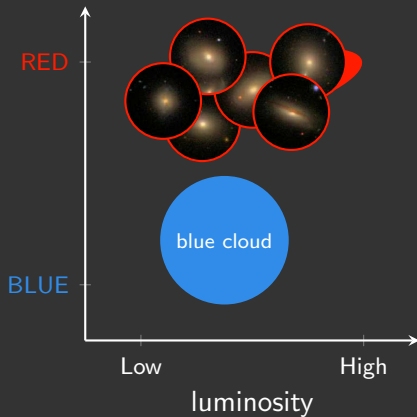
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Baldry et al. 2004

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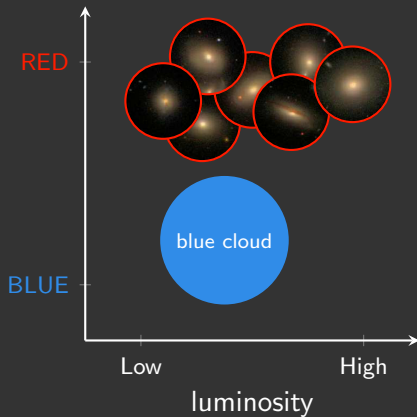


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Baldry et al. 2004

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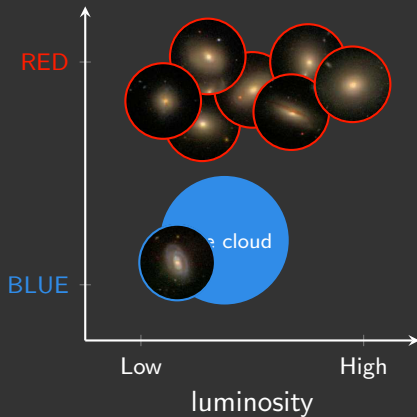




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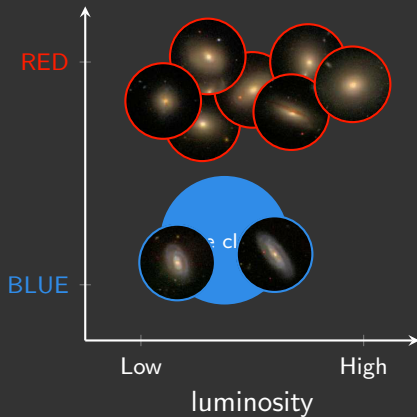
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Baldry et al. 2004

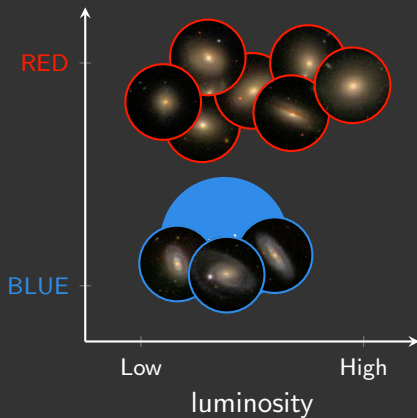
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Baldry et al. 2004

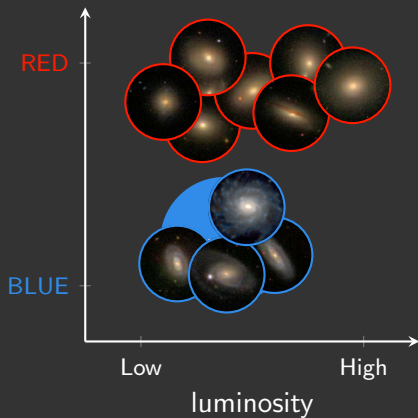
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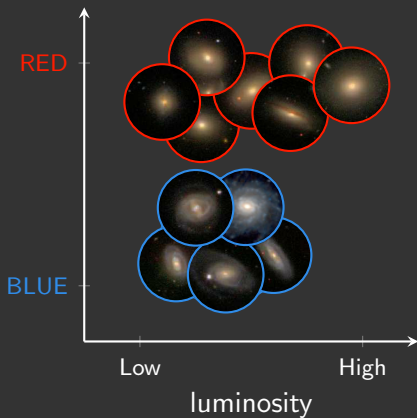
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Baldry et al. 2004

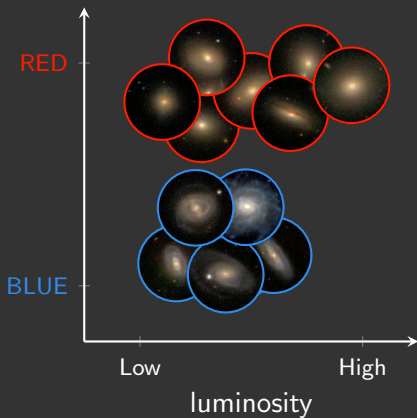
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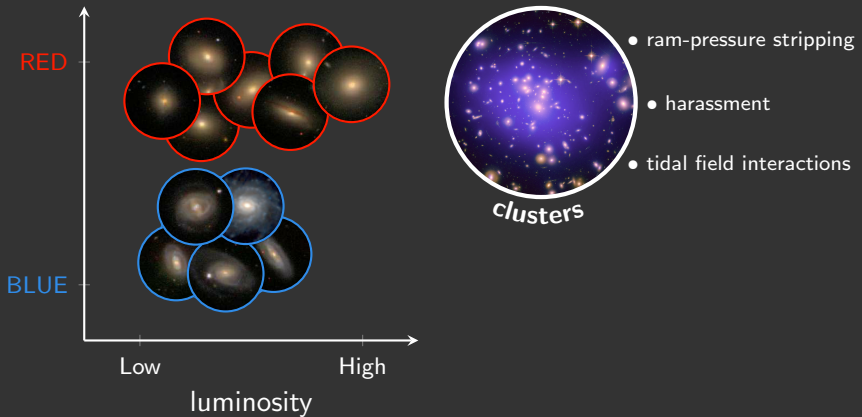
...



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Baldry et al. 2004

...

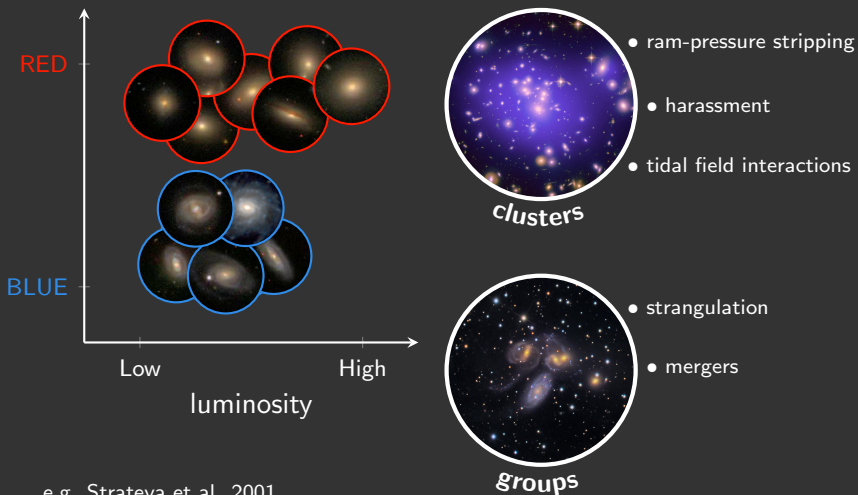


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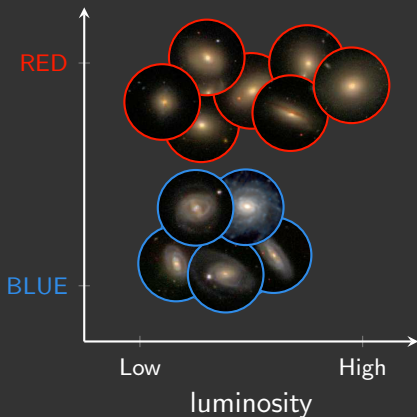




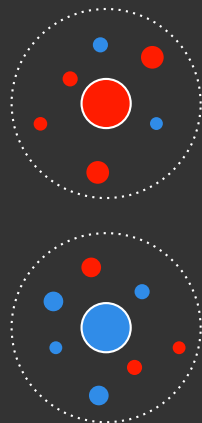
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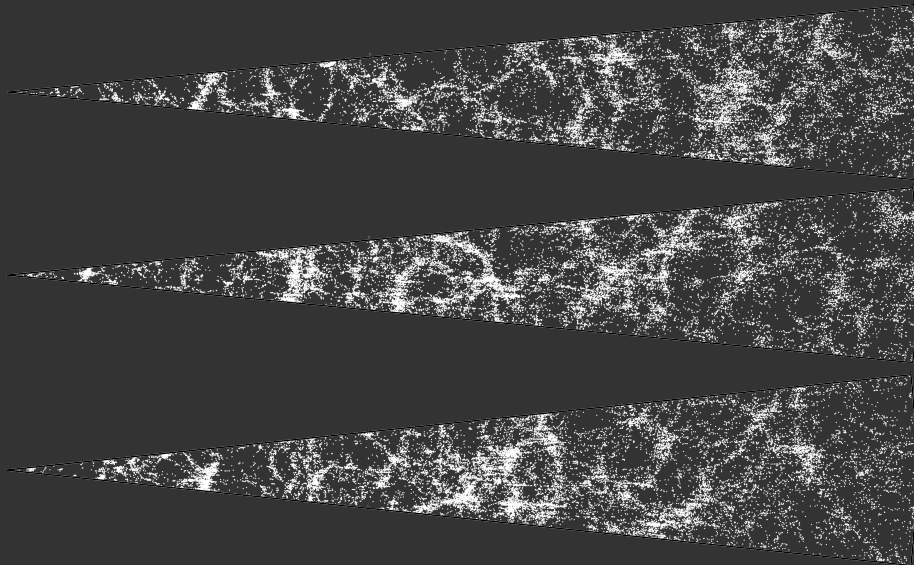


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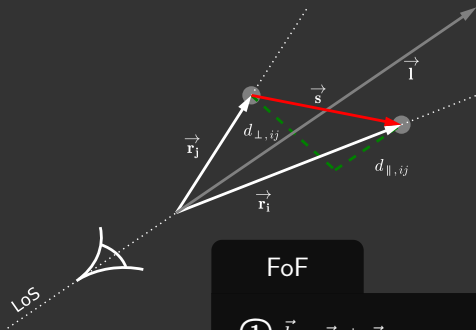
**1-halo conformity**

cf Hearin et al. 2015



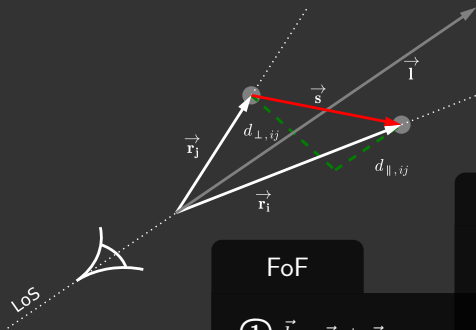
## GAMA

- 3 fields: G09, G12, G15
- 180 deg<sup>2</sup>
- spectroscopy (98% complete sampling)
- multi- $\lambda$  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  $d_{\perp,ij} = \sqrt{\vec{s} \cdot \vec{s} - d_{\parallel,ij}^2}$

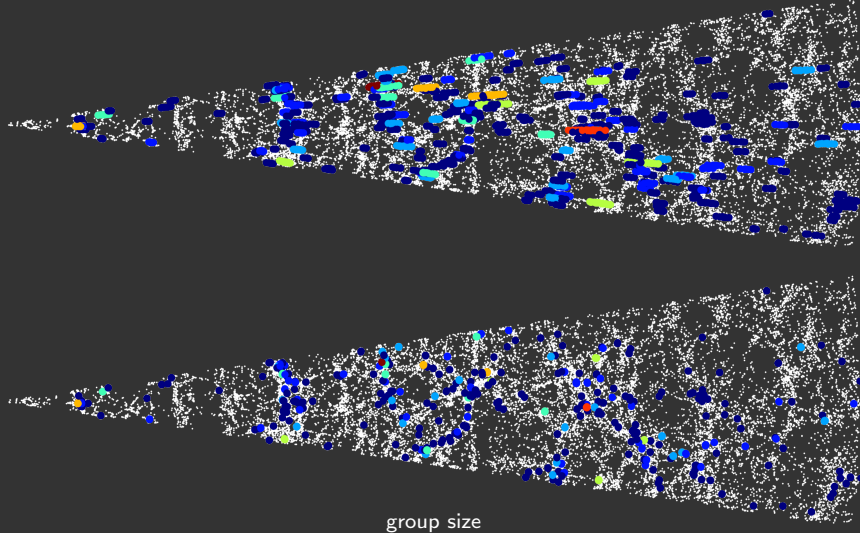


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## Linking

- ①  $d_{\perp,ij} < b_{\perp} \bar{r}_{ij}$
- ②  $d_{\parallel,ij} < b_{\parallel} \bar{r}_{ij}$
- ③  $\bar{r}_{ij} = \frac{1}{2} \left( n_i^{-1/3} + n_j^{-1/3} \right)$



group size



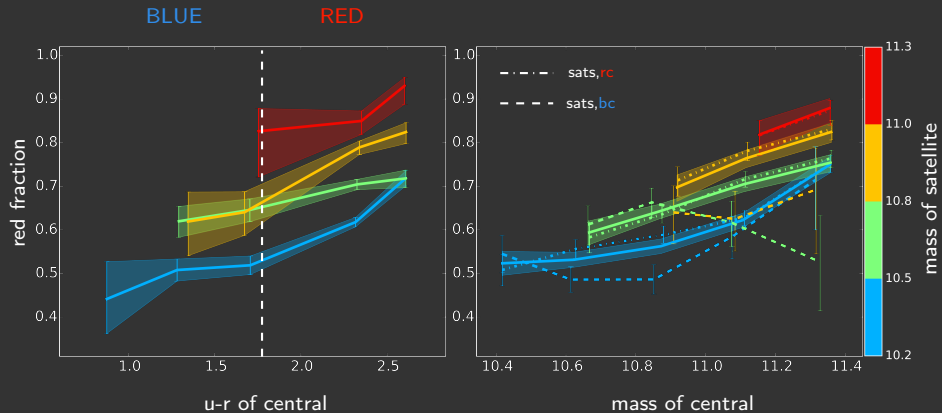
## Groups

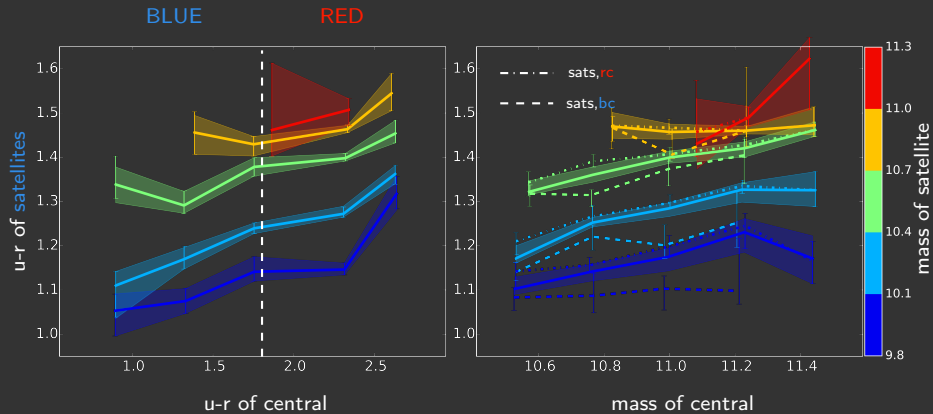
- $0.02 < z < 0.2$  &  $M_{\star} > 10^{10.2} M_{\odot}$
- 7900 groups
- 23000 group galaxies (40%)
- 36000 lone galaxies (60%)

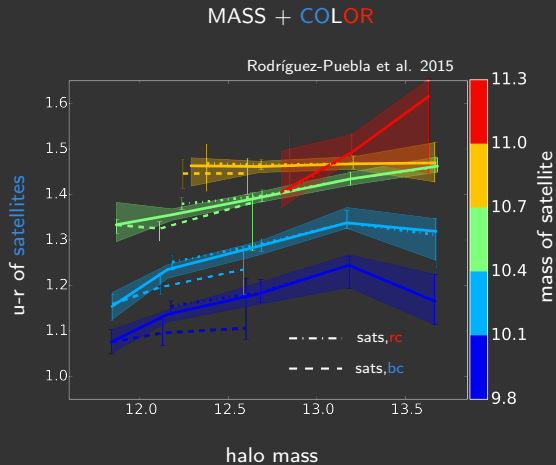
group size











## 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.