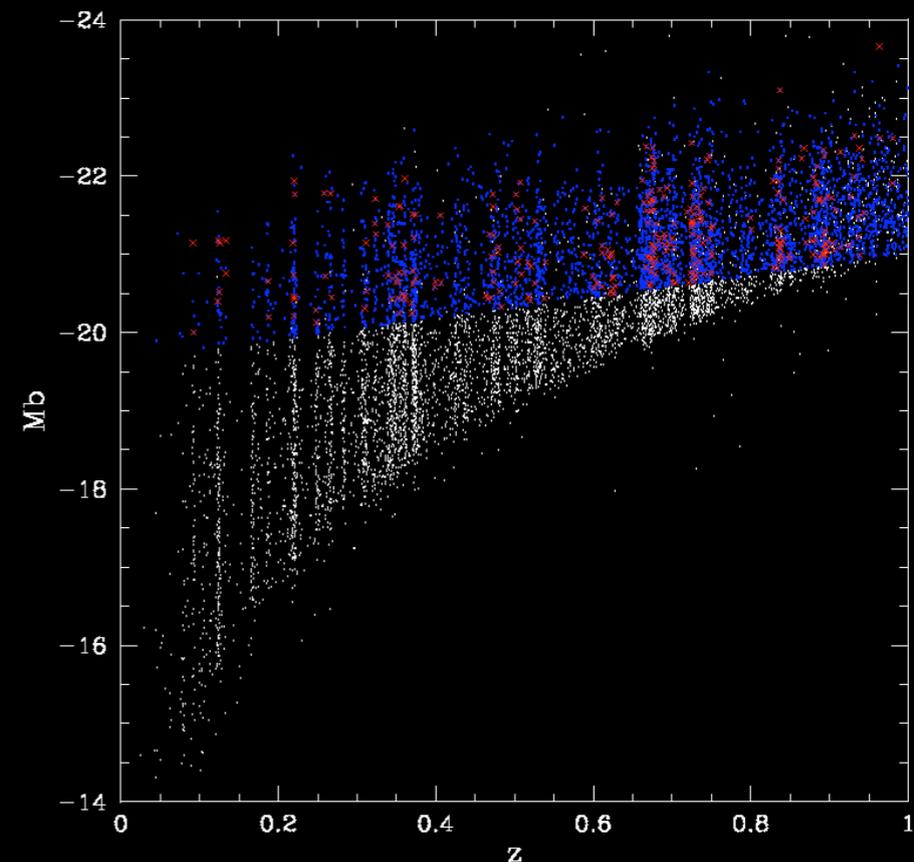


Environments and properties of the close kinematic pairs of galaxies in zCOSMOS 10k sample

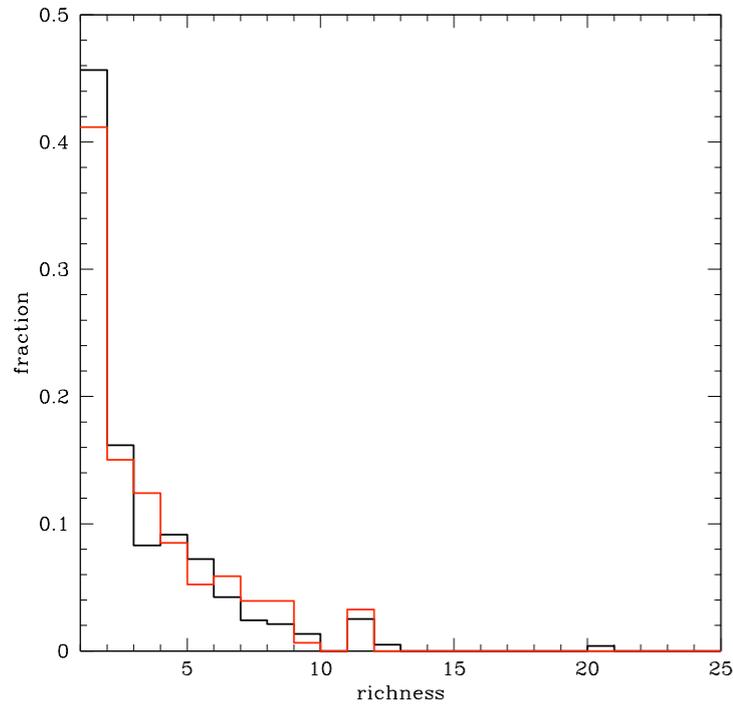
Close kinematic pairs:

- selected among v. secure redshifts
- abs. mag cut $M_B < -19.64 - 1.36z$
- pairs: $dr < 100h^{-1}$ kpc, $dV < 500$ km/s, $dM_B < 1.5$

with this criteria over **150 pairs**

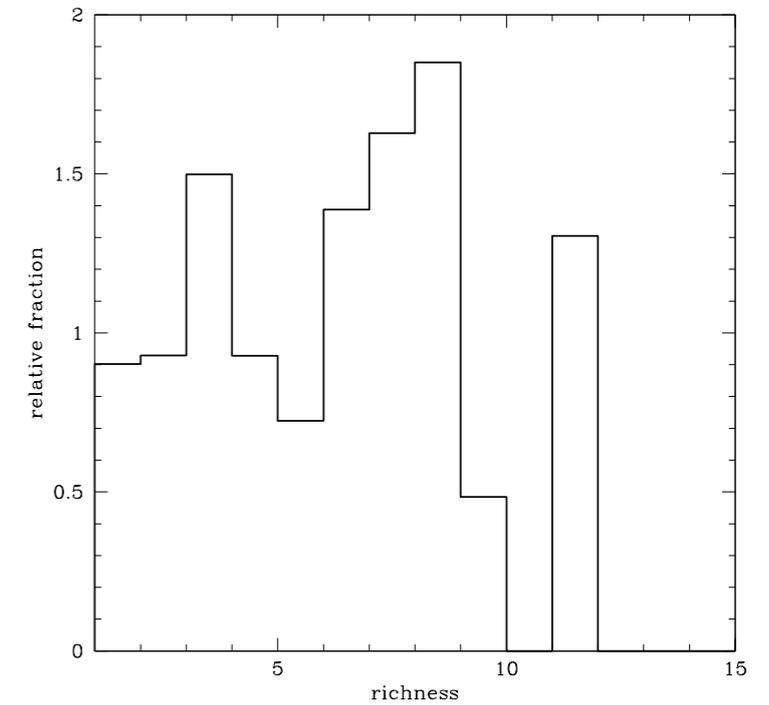


Close kinematic pairs of galaxies in zCOSMOS 10k sample

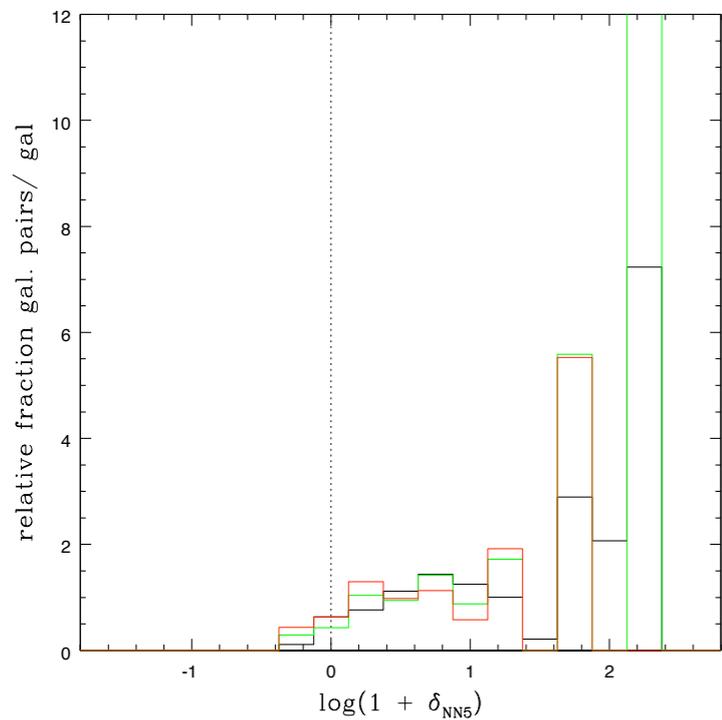


Observed richness of:
 - galaxies in pairs
 - all galaxies in groups

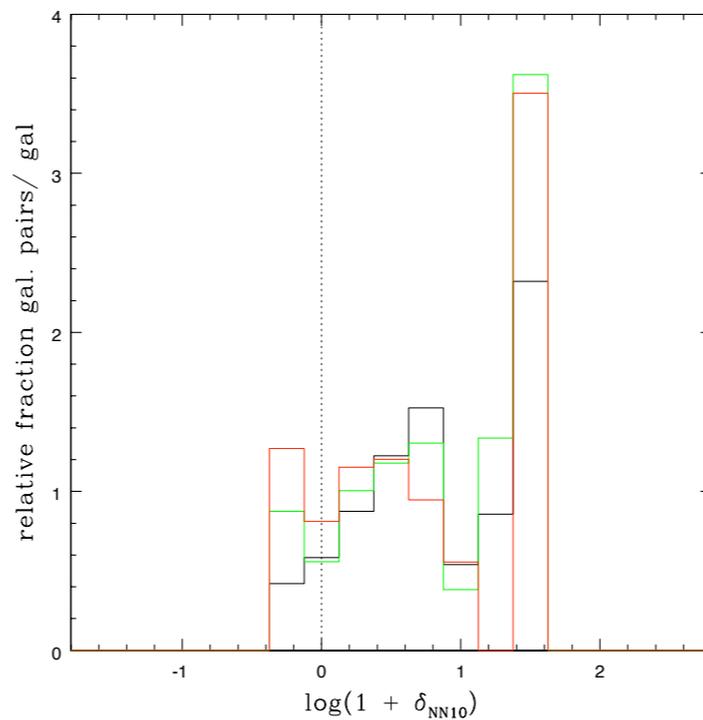
Where?



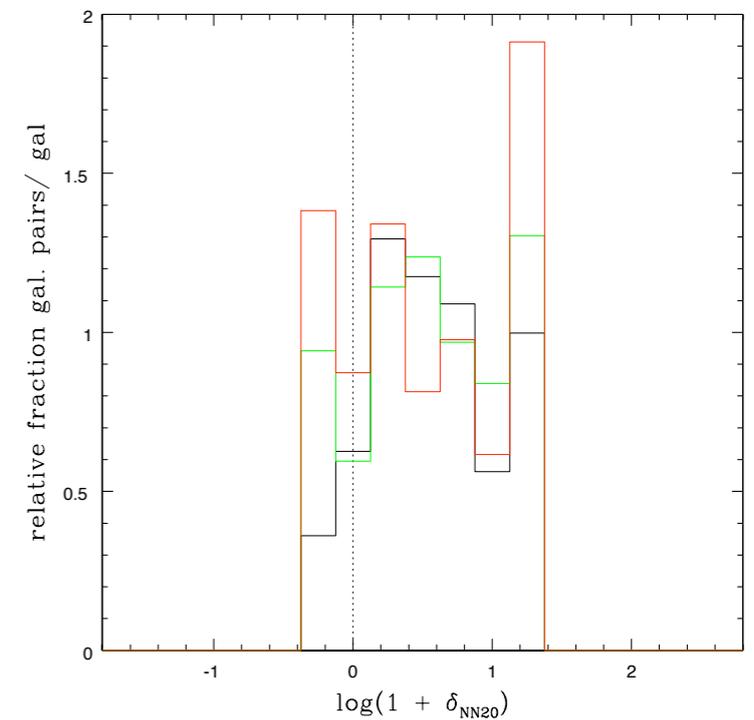
Normalized relative fraction of pair galaxies to all galaxies in the groups as a function of observed richness



Normalized relative fractions of pair gal. ($100 h^{-1}$ kpc, $50 h^{-1}$ kpc, $30 h^{-1}$ kpc) to all galaxies as a function of overdensities derived with 5 NN



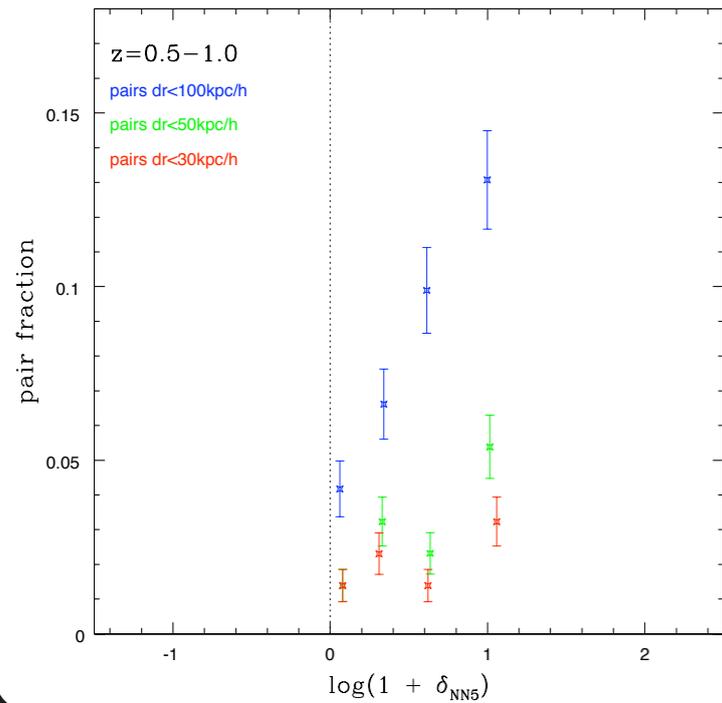
Normalized relative fractions of pair gal. ($100 h^{-1}$ kpc, $50 h^{-1}$ kpc, $30 h^{-1}$ kpc) to all galaxies as a function of overdensities derived with 10 NN



Normalized relative fractions of pair gal. ($100 h^{-1}$ kpc, $50 h^{-1}$ kpc, $30 h^{-1}$ kpc) to all galaxies as a function of overdensities derived with 20 NN

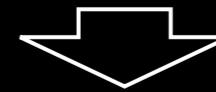
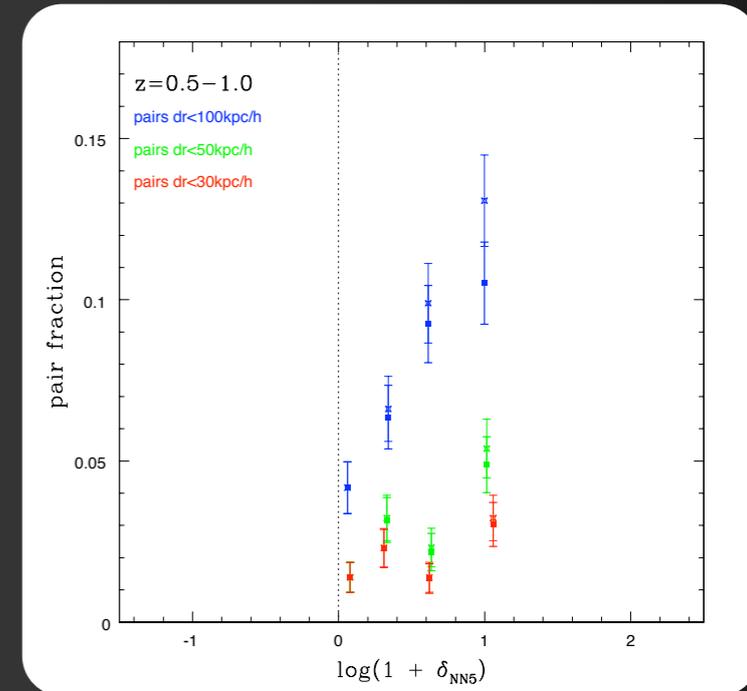
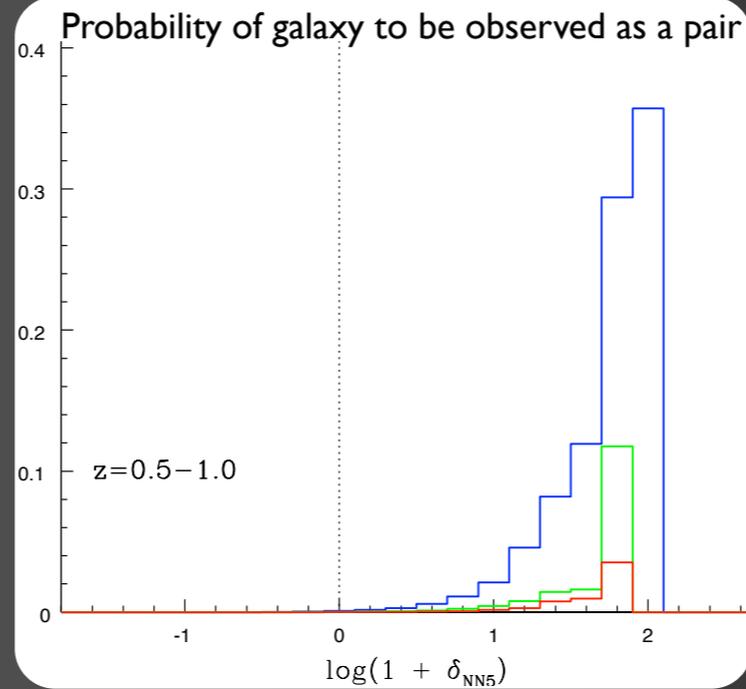
Pair fraction as a function of overdensities

Pair fraction (uncorrected)

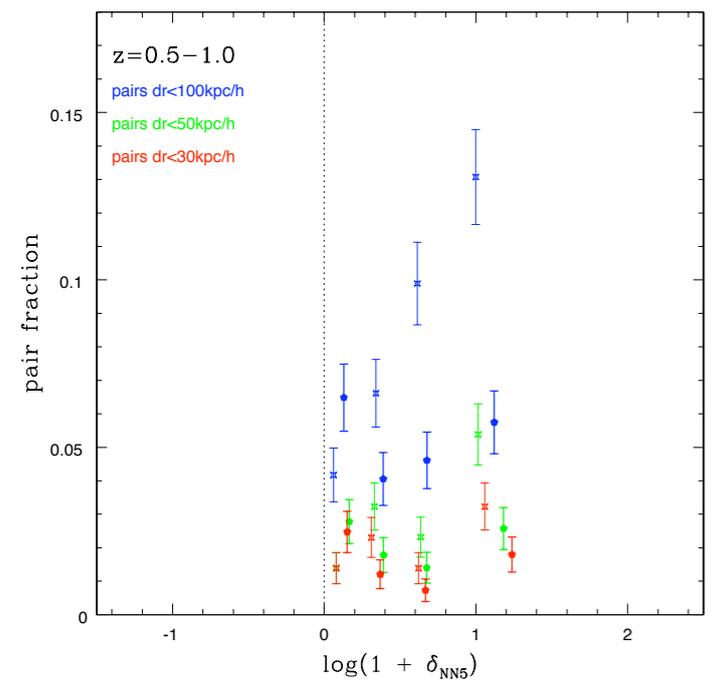


Correction: ■ ■ ■

- some of the pairs might be due to random superposition effects

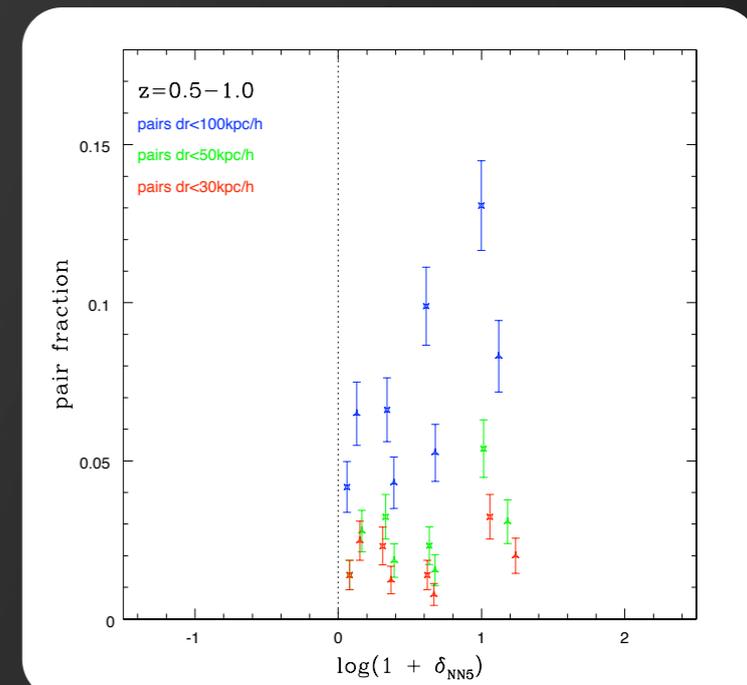
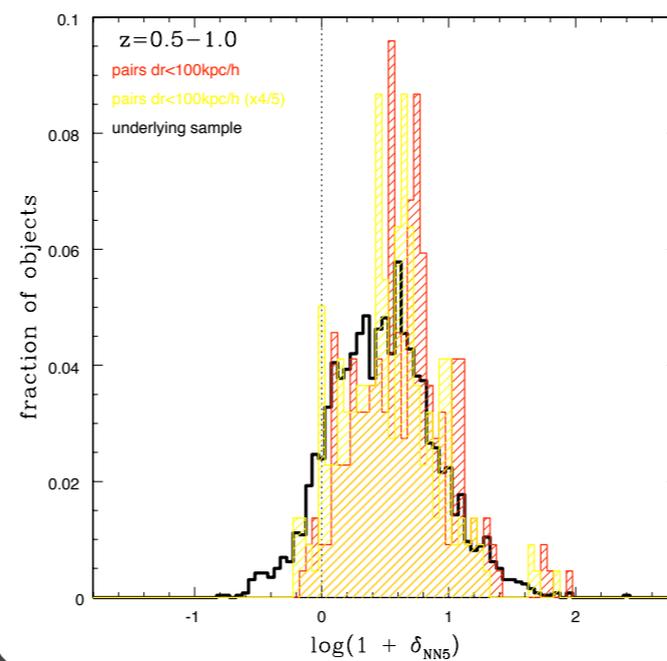


Pair fraction (corrected) ■ ■ ■



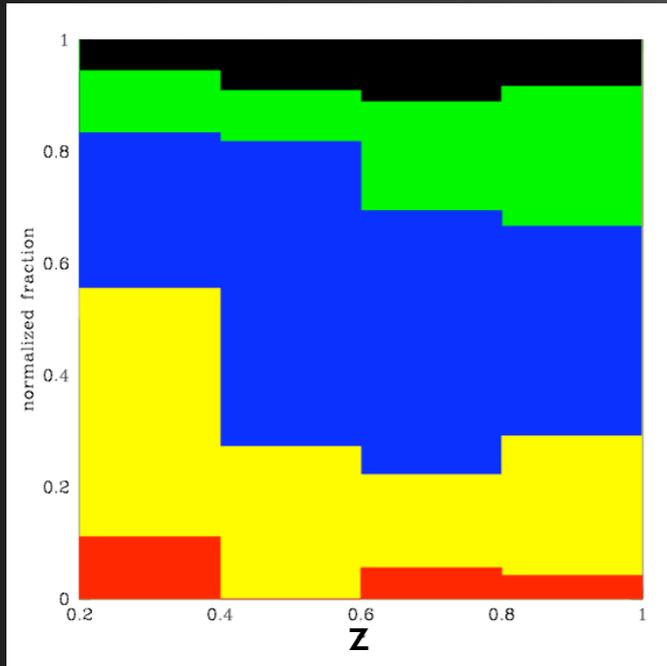
2nd correction: ▲ ▲ ▲

- if pair considered as one object, there is a need for altering the NN counts



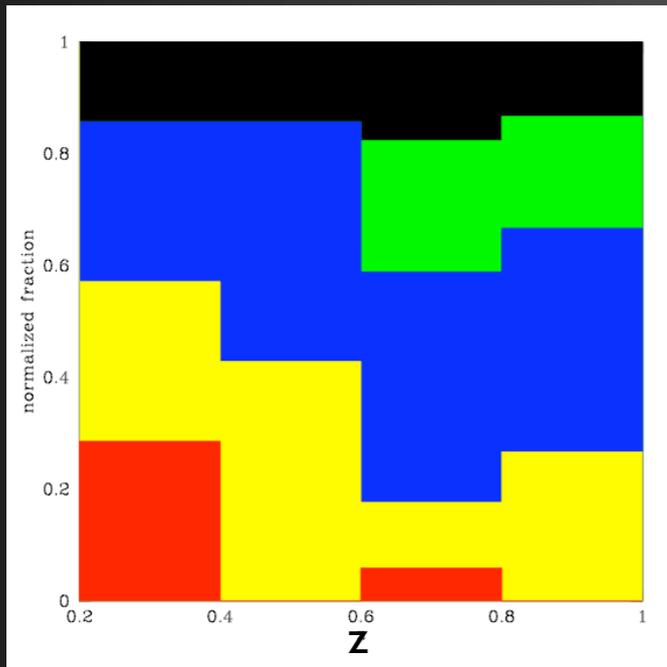
Morphologies of galaxies in close kinematic pairs

Pair - pair morphologies



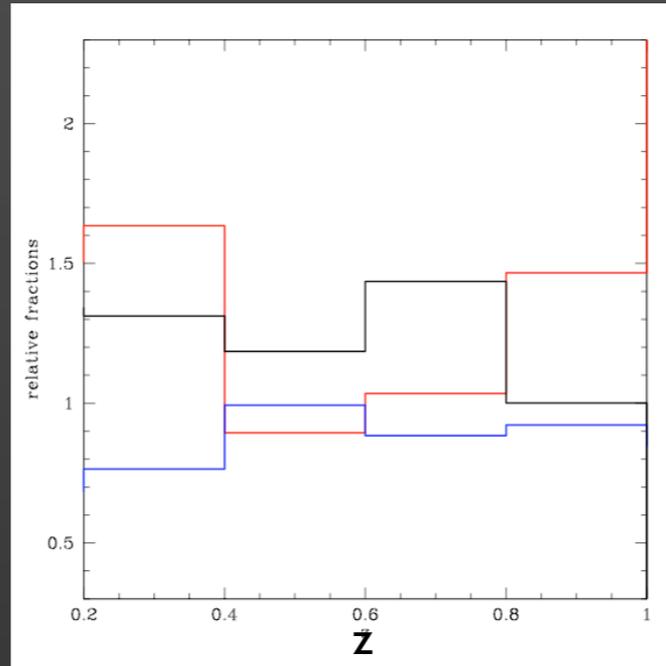
separations up to 100 kpc

type 3 - type 3
(irregular - irregular)
type 3 - other
type 2 - type 2
(disc - disc)
type 1 - other (mainly 2)
type 1 - type 1
(spheroid - spheroid)



separations up to 50 kpc

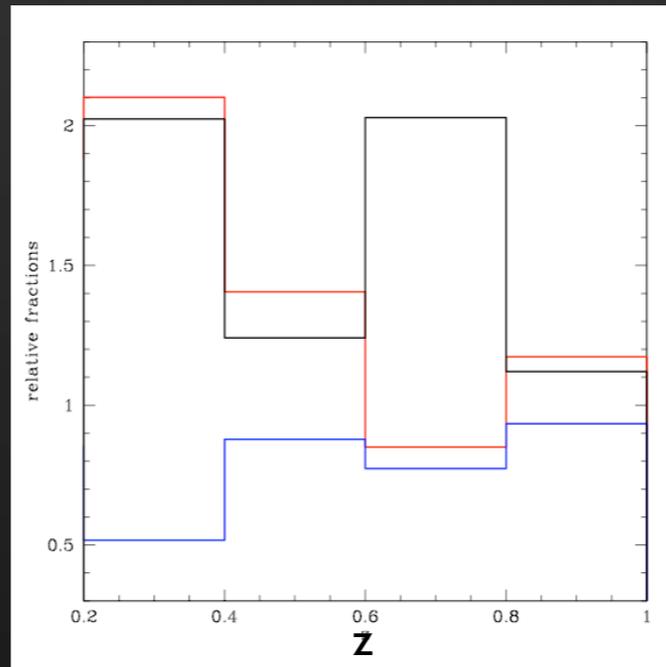
Relative fractions of pair galaxies / underlying sample



separations up to 100 kpc

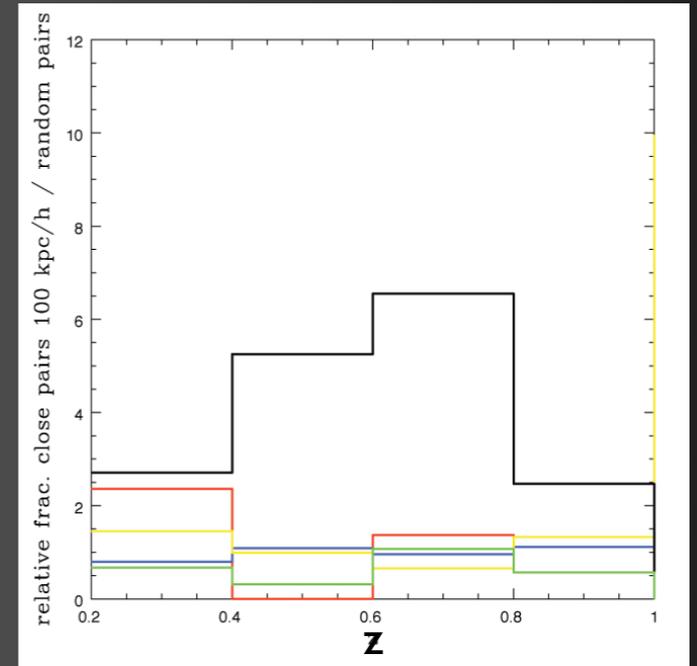
ZEST

Type 1 (spheroid)
Type 2 (disc)
Type 3 (irregular)



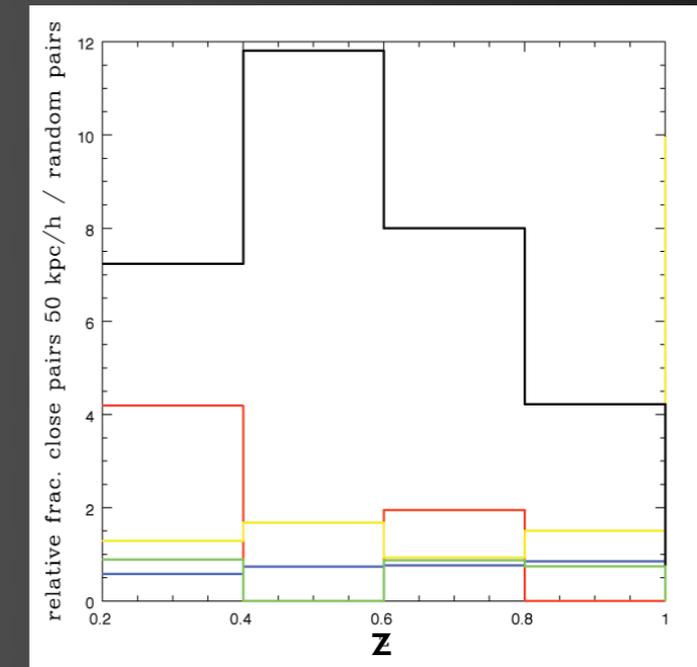
separations up to 50 kpc

Relative fractions of pair - pair morph. in pair galaxies / random pairs from underlying sample



separations up to 100 kpc vs underlying sample

type 3 - type 3
(irregular - irregular)
type 3 - other
type 2 - type 2
(disc - disc)
type 1 - other (mainly 2)
type 1 - type 1
(spheroid - spheroid)



separations up to 50 kpc vs underlying sample

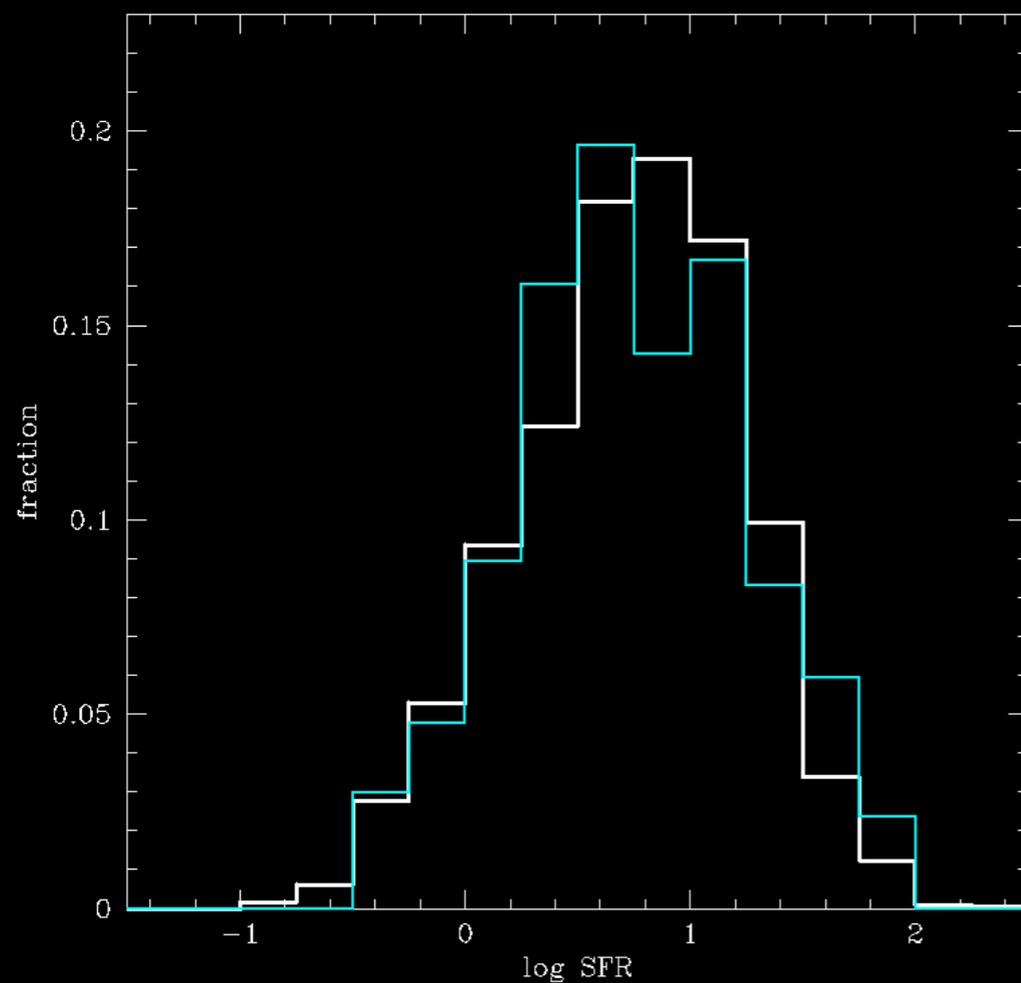
Properties

SFR & SSFR of galaxies in the close kinematic pairs

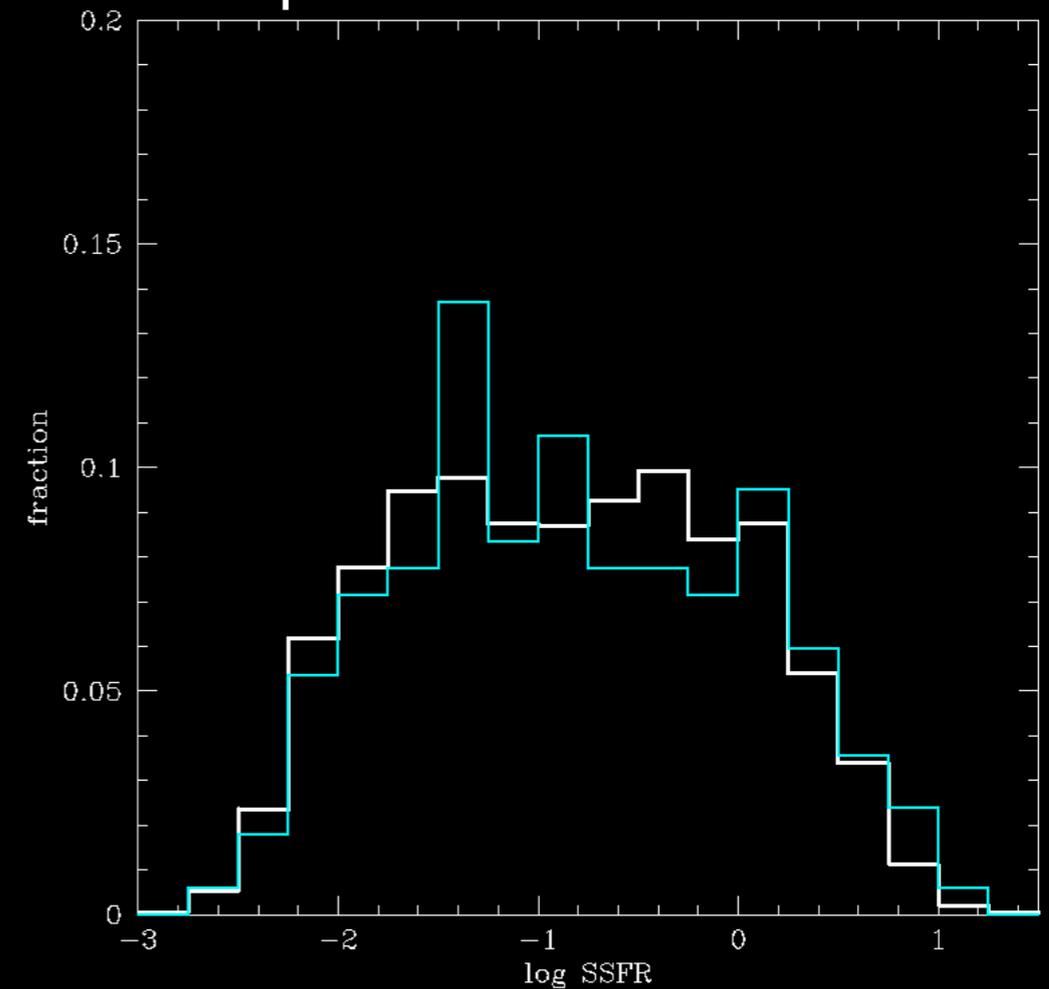
galaxies with derived SFR $z=0.5-0.9$

galaxies in pairs in separation up to **100 h^{-1} kpc** with derived SFR $z=0.5-0.9$

starformation rate



specific starformation rate



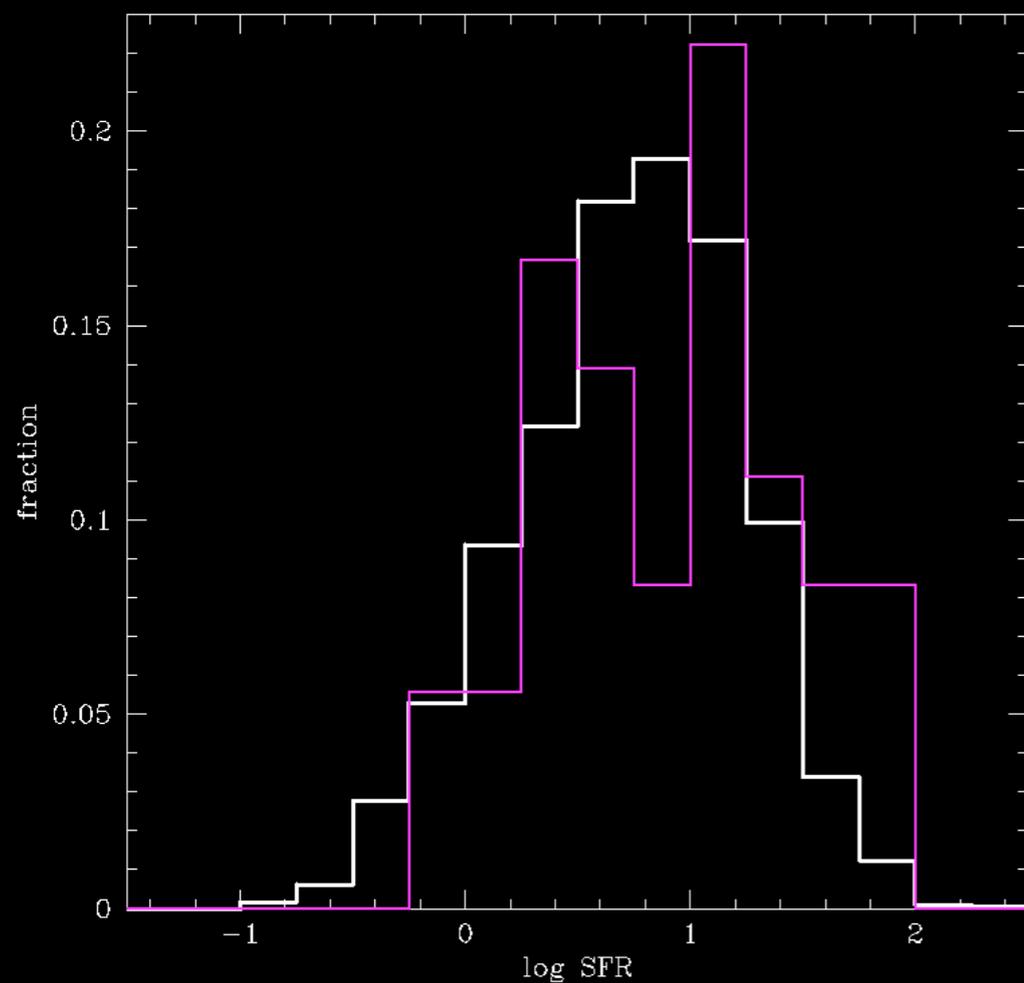
Properties

SFR & SSFR of galaxies in the close kinematic pairs

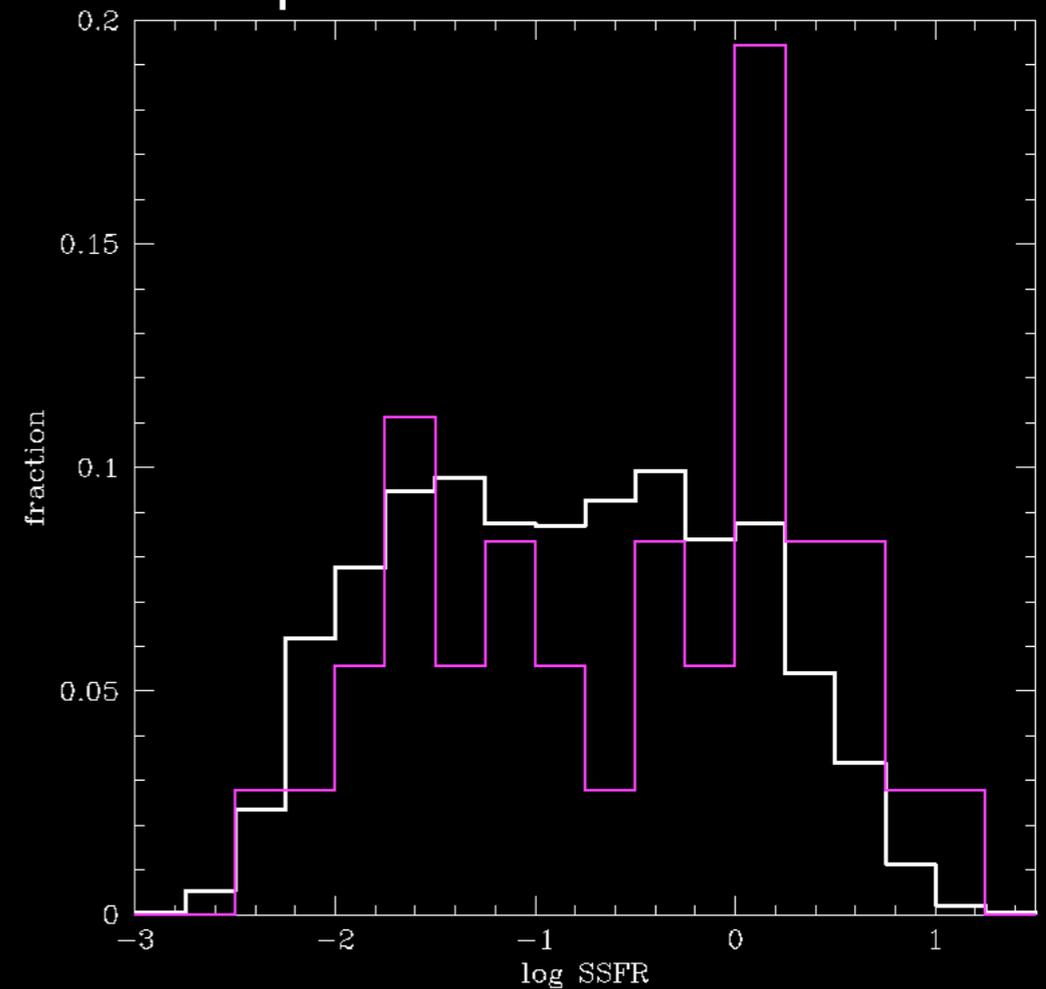
galaxies with derived SFR $z=0.5-0.9$

galaxies in pairs in separation up to **30 h^{-1} kpc** with derived SFR $z=0.5-0.9$

starformation rate



specific starformation rate



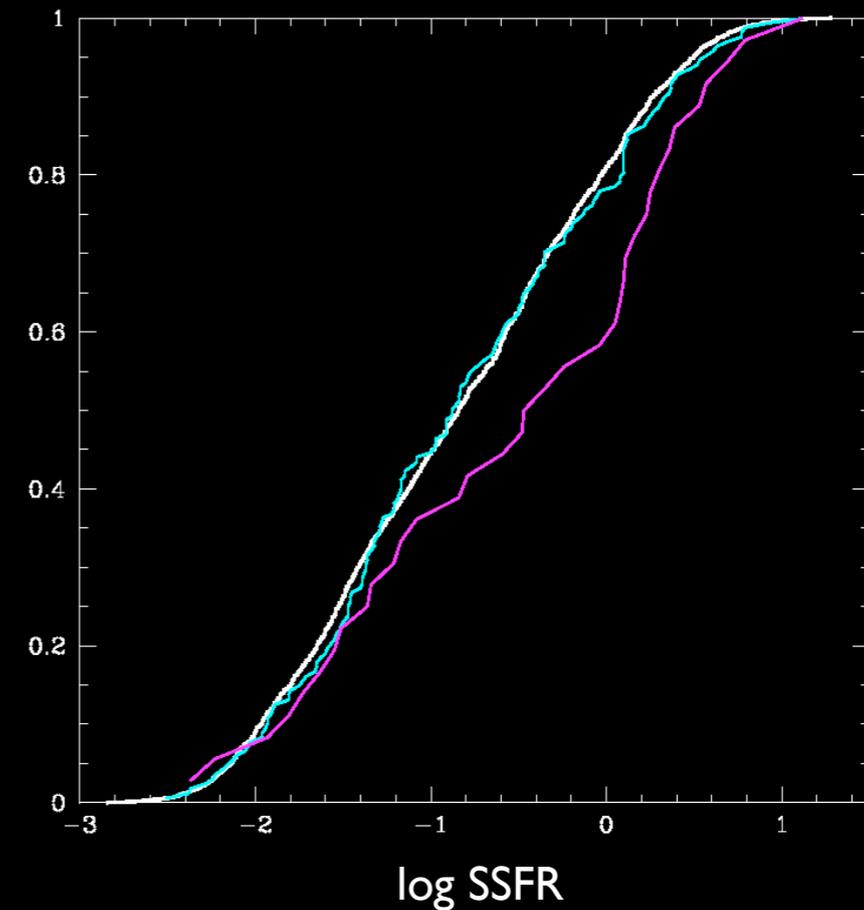
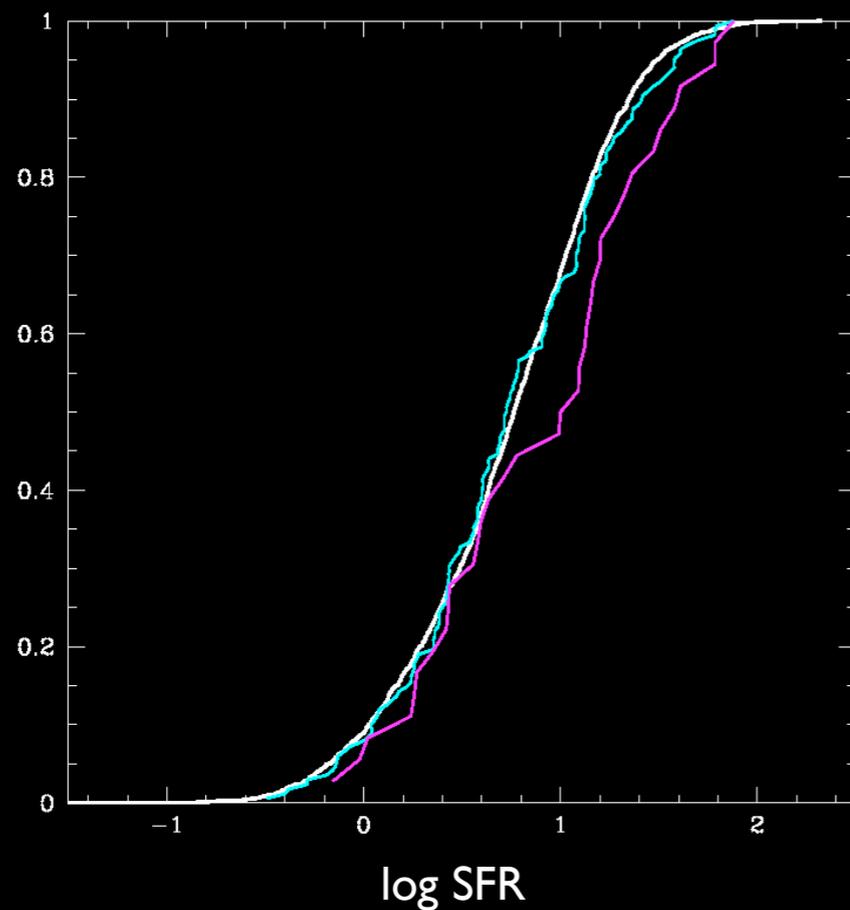
Properties

SFR & SSFR of galaxies in the close kinematic pairs

galaxies with derived SFR $z=0.5-0.9$

galaxies in pairs in separation up to **30 h^{-1} kpc** with derived SFR $z=0.5-0.9$

galaxies in pairs in separation up to **100 h^{-1} kpc** with derived SFR $z=0.5-0.9$



Fraction of the **PSB** galaxies in pairs is $\sim 2x$ higher than in the whole sample

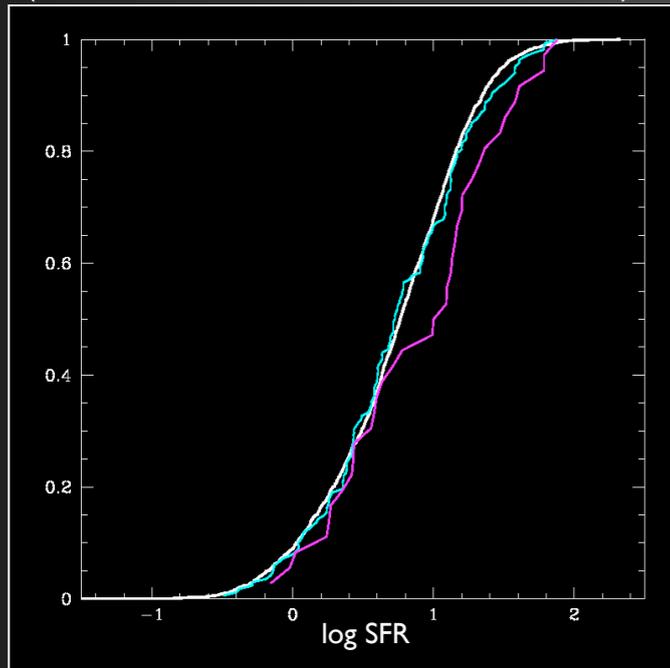
D.Vergani et al. 2009

SFR of galaxies in close kinematic pairs

OII based SFR

$z=0.5-0.9$

(based on Christian Maier measurements)



galaxies with derived SFR

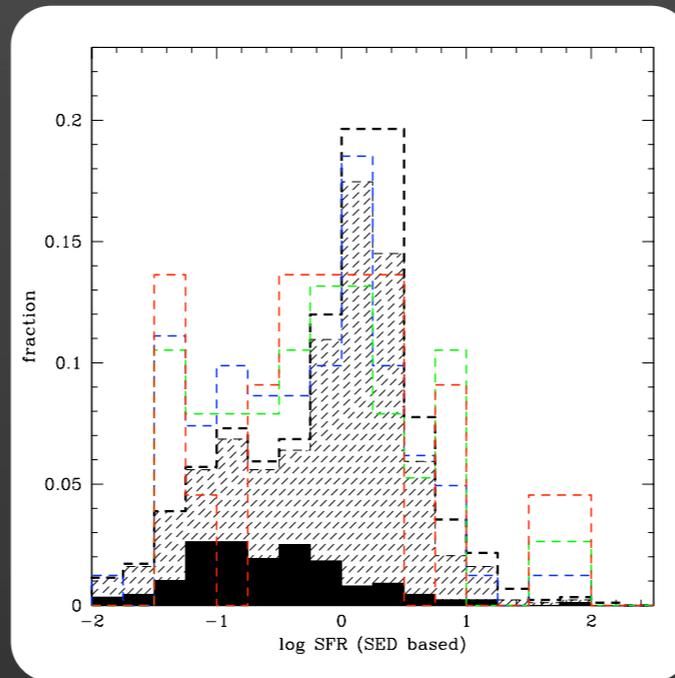
galaxies in pairs in separation up to $100 h^{-1} kpc$
galaxies in pairs in separation up to $30 h^{-1} kpc$

SFR estimates based on SED fittings

for redshift range $\sim 0.0 - 0.5$ (dashed lines) & for redshift range $0.5 - 1.0$ (solid lines)

all galaxies with derived SFR

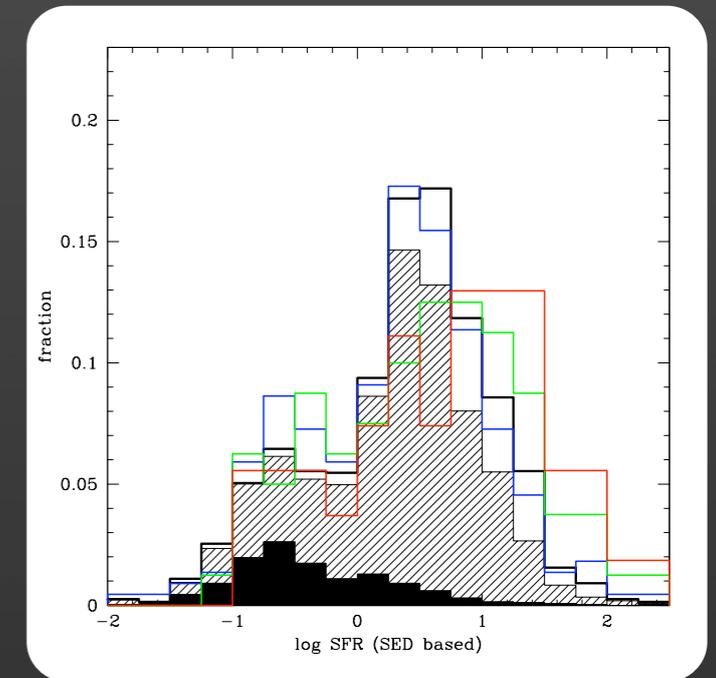
galaxies in pairs in separation up to $30 h^{-1} kpc$ with derived SFR
galaxies in pairs in separation up to $50 h^{-1} kpc$ with derived SFR
galaxies in pairs in separation up to $100 h^{-1} kpc$ with derived SFR



ZEST

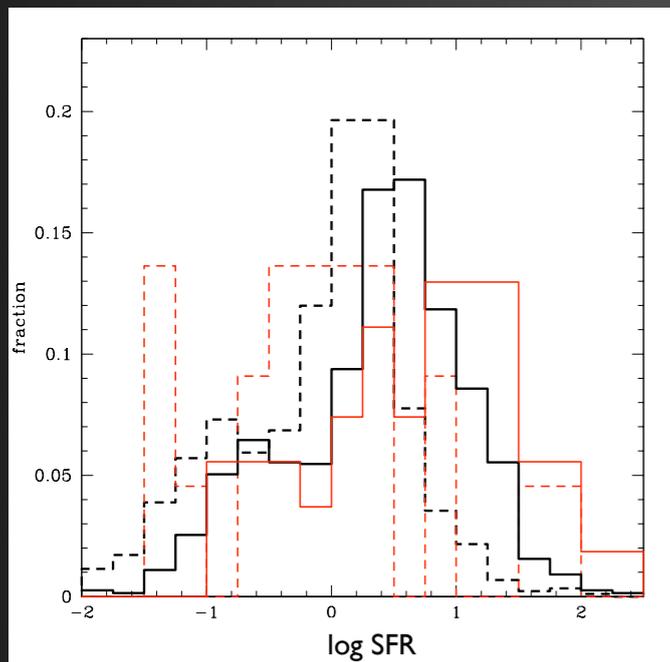
morphologies:

SOLID - spheroids
HASHED - discs
EMPTY - irregulars



SED fitting based SFR

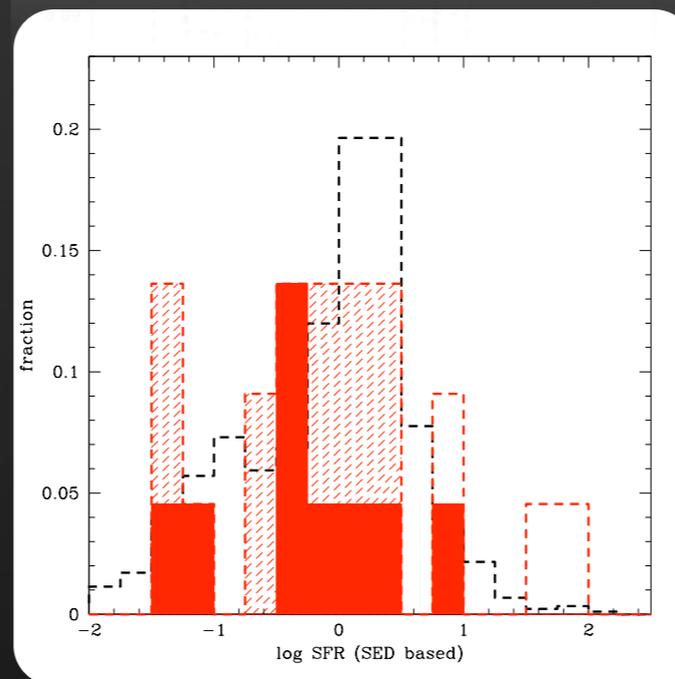
(by Micol Bolzonella)



SFR based on SED fitting $z=0.0 - 0.5$ (dashed lines)
SFR based on SED fitting $z=0.5 - 1.0$ (solid lines)

all galaxies with derived SFR

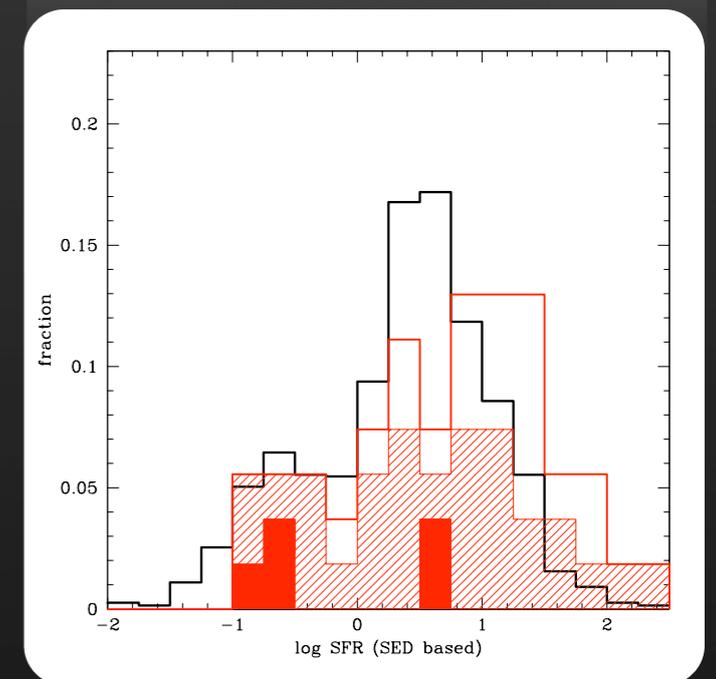
galaxies in pairs in separation up to $30 h^{-1} kpc$



ZEST

morphologies:

SOLID - spheroids
HASHED - discs
EMPTY - irregulars



Outlook

- Future bright 20k sample gives a gain in pair statistics by a factor of ~ 3 (as expected), while doubling the number of all galaxies
- Deep 4.5k gives single cases of close pairs

Within $dv < 500 \text{ km/s}$, $dr < 100 h^{-1} \text{ kpc}$, $\text{flag} > 1.5$, $z > 1$

z_1	z_2	flag 1	flag 2
2.6771	2.6765	3.5	3.5
2.6761	2.6737	3.5	2.5
2.6047	2.6021	4.5	2.5
2.1373	2.1398	2.5	3.5
1.9726	1.9686	4.5	2.5
1.9524	1.9483	2.1	23.5