Gas-Fuelling in the Group Environment - The Star Formation Activity of Satellite Spiral Galaxies

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With

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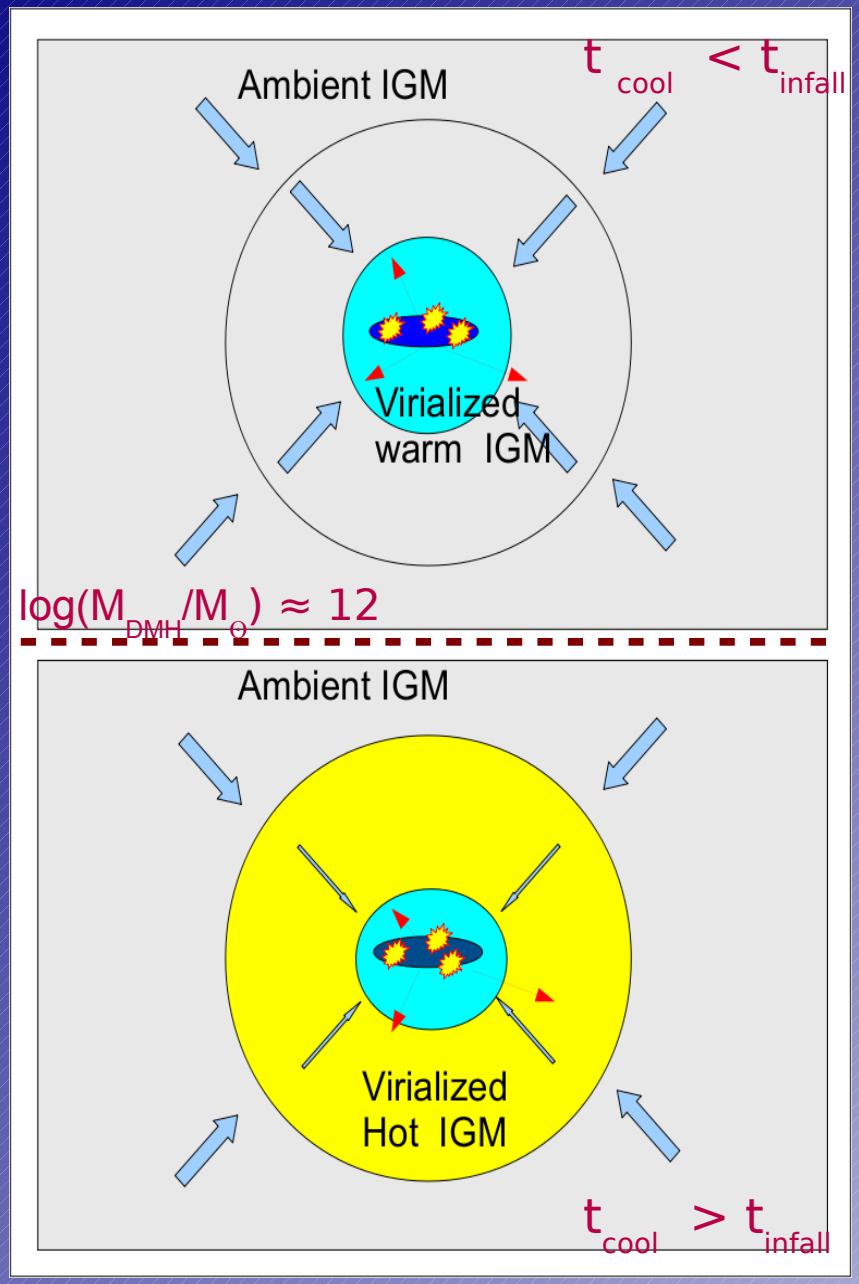
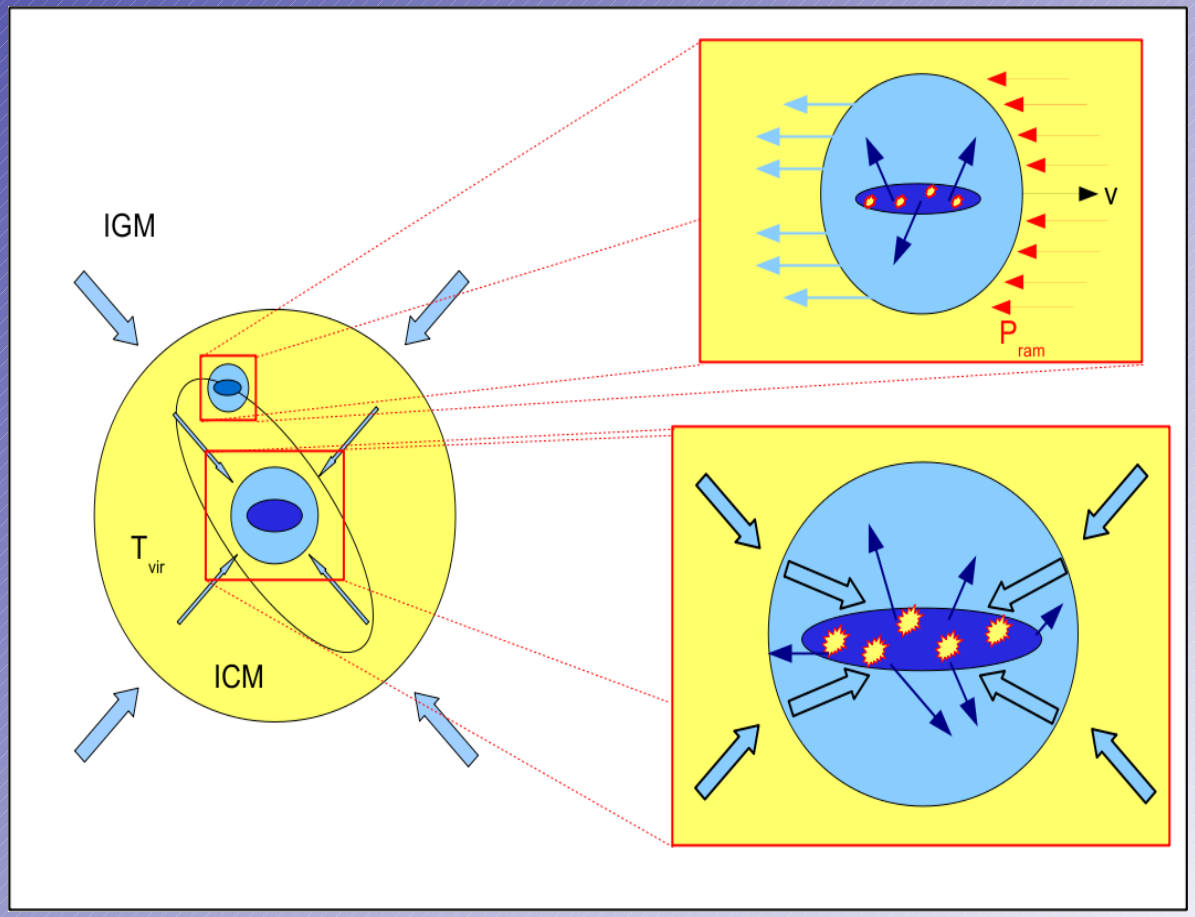
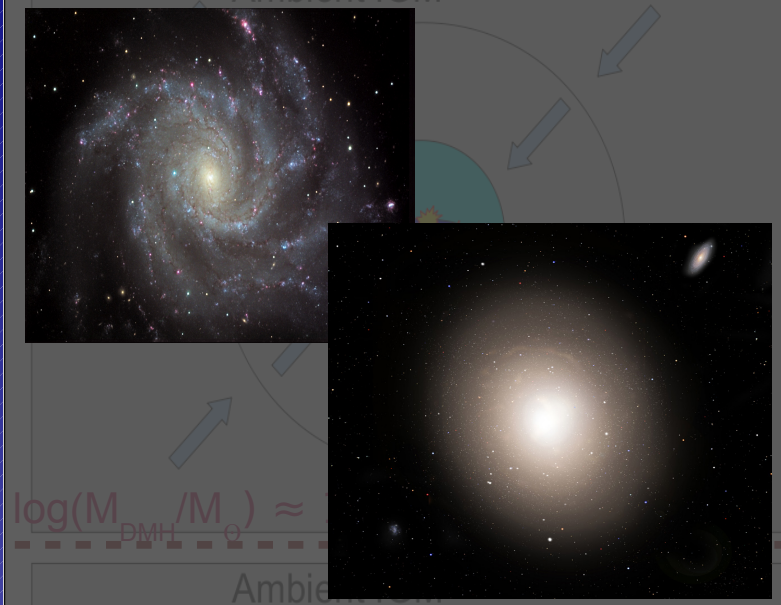
Galaxy Fuelling and the Gas-Cycle





Constraining Galaxy Fuelling and the Gas-Cycle ?

A selection of difficulties



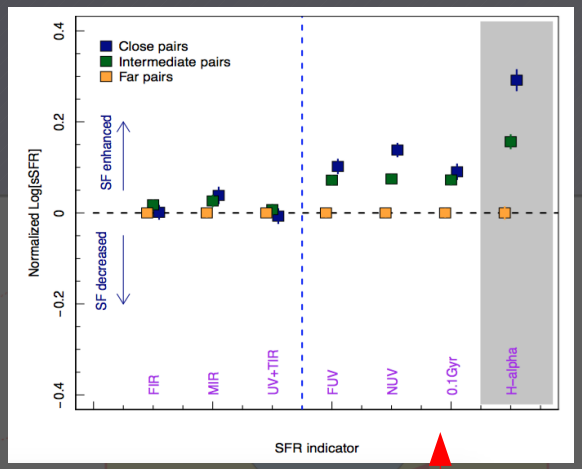
Galaxy-morphology dichotomy

sSFR/ISM dichotomy

Morphology - density/environment

Galaxy interactions & sSFR

Mergers/close pairs



(E.g. Alatalo 2016, Bitsakis 2016, Davies 2015)

Need proxy for gas content → SFR

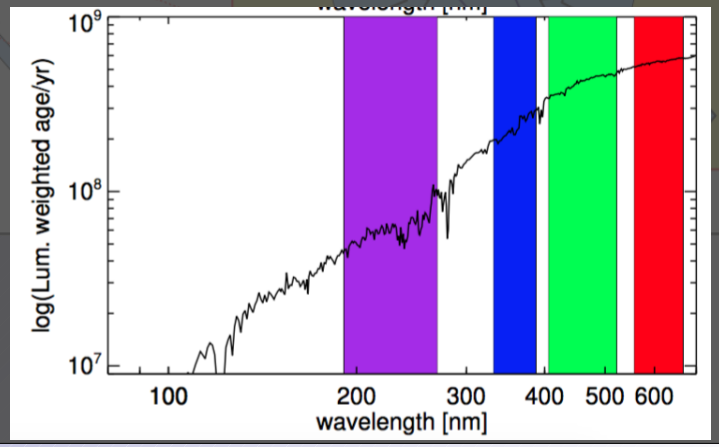
SFR timescale << τ_{dyn} (~1 Gyr)

NUV

u

g

r

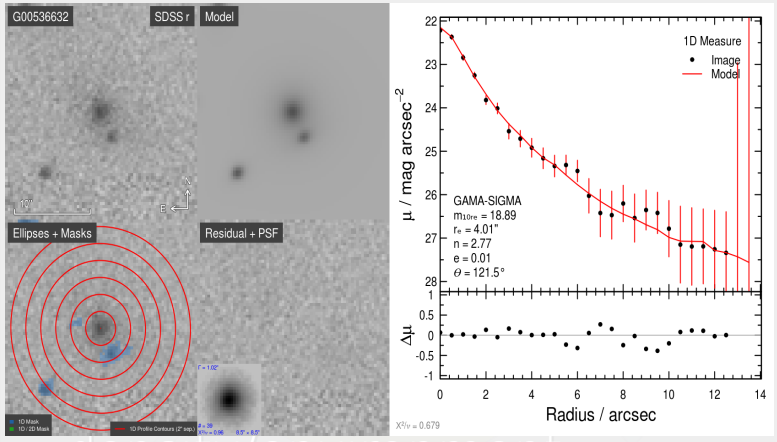


Constraining the Galaxy Fuelling and the Gas-Cycle ?

~~A selection of difficulties~~
GAMA's Solutions

Complete and SFR unbiased selection of disk dominated galaxies (Grootes+2014)

GAMA structural measurements and broadband photometry



Kelvin+2011

GAMA's high (> 98%) spectroscopic completeness

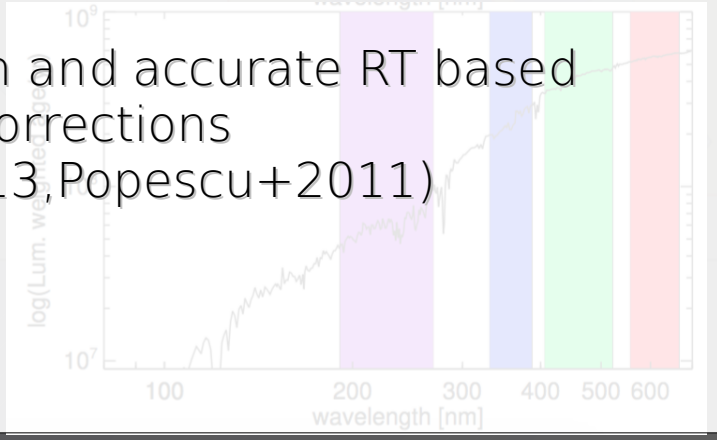
Group catalogue 12 < log(Mhalo) < 14

Exclude (close; 50 kpc/h 1000km/s) pairs

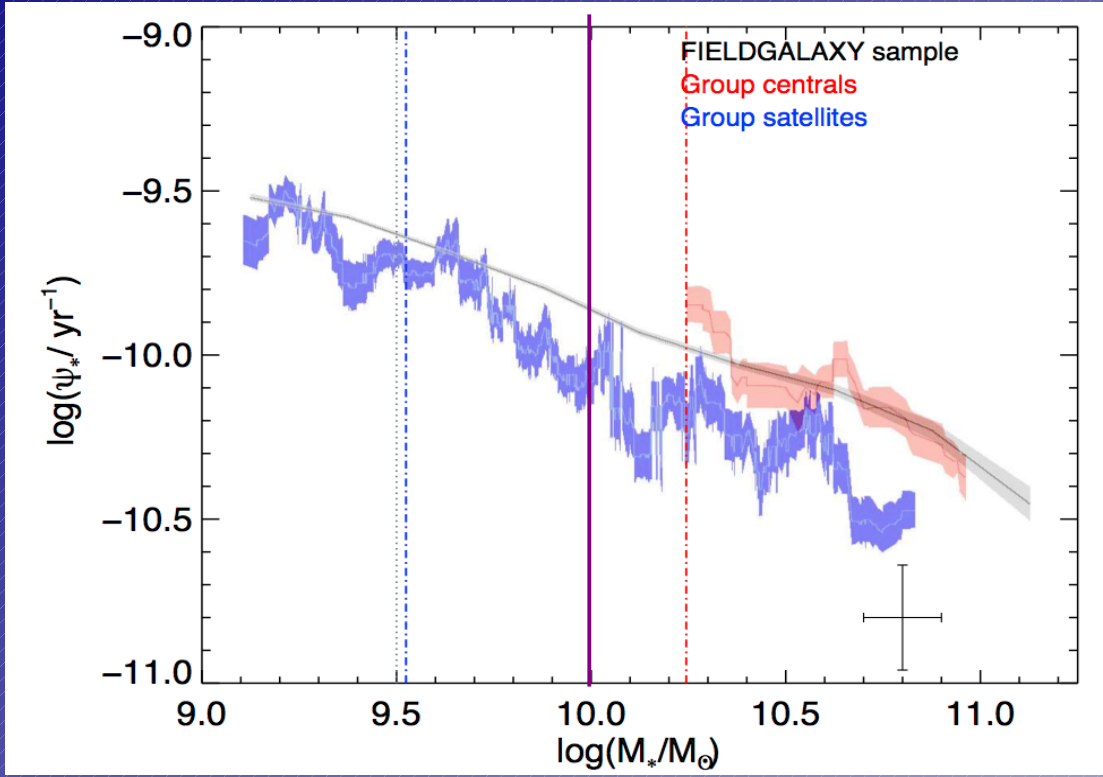
(E.g. Alatalo 2016, Bitsakis 2016, Davies 2015)

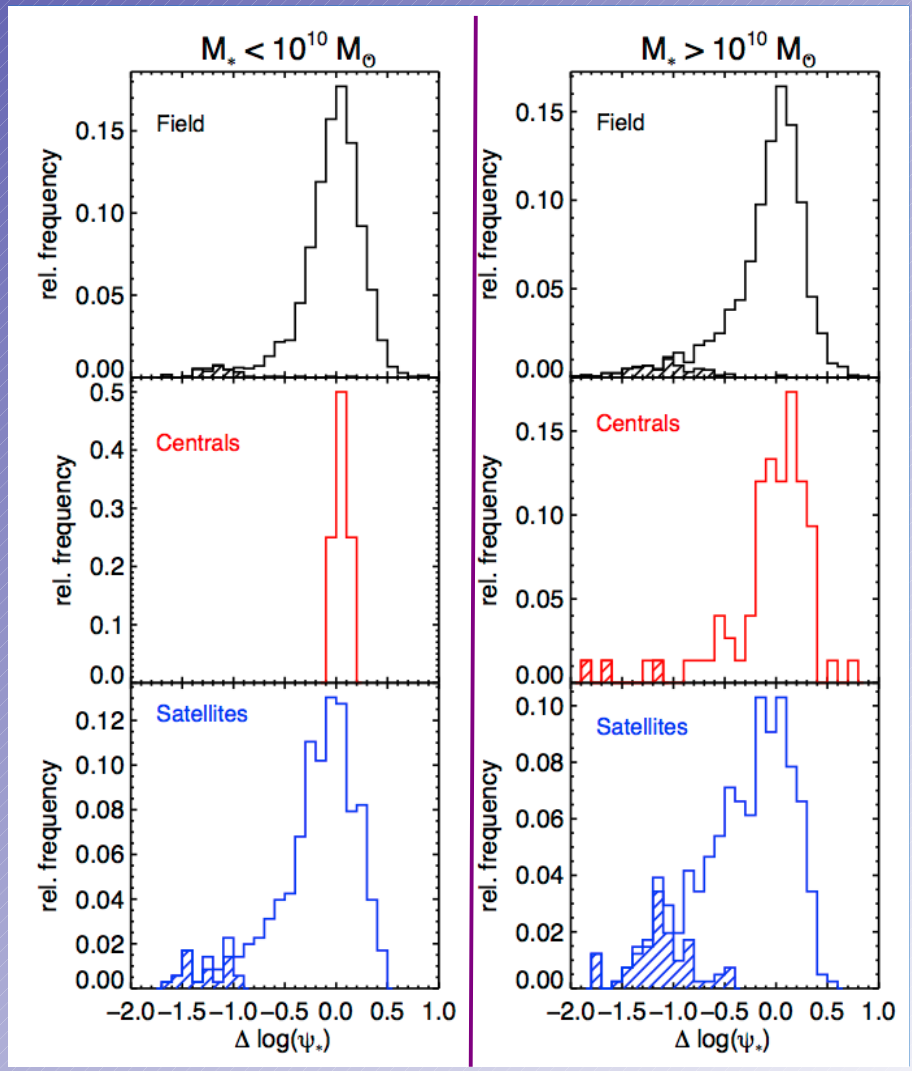
Integrated NUV (GALEX; ~10^8 yr)

High precision and accurate RT based attenuation corrections (Grootes+2013,Popescu+2011)



Impact of the Environment: Satellite & Central Disk-dominated Spirals





disk-dominated fraction only decreases by 40% w.r.t field

Large fraction of disks have spent Gyrs as satellites

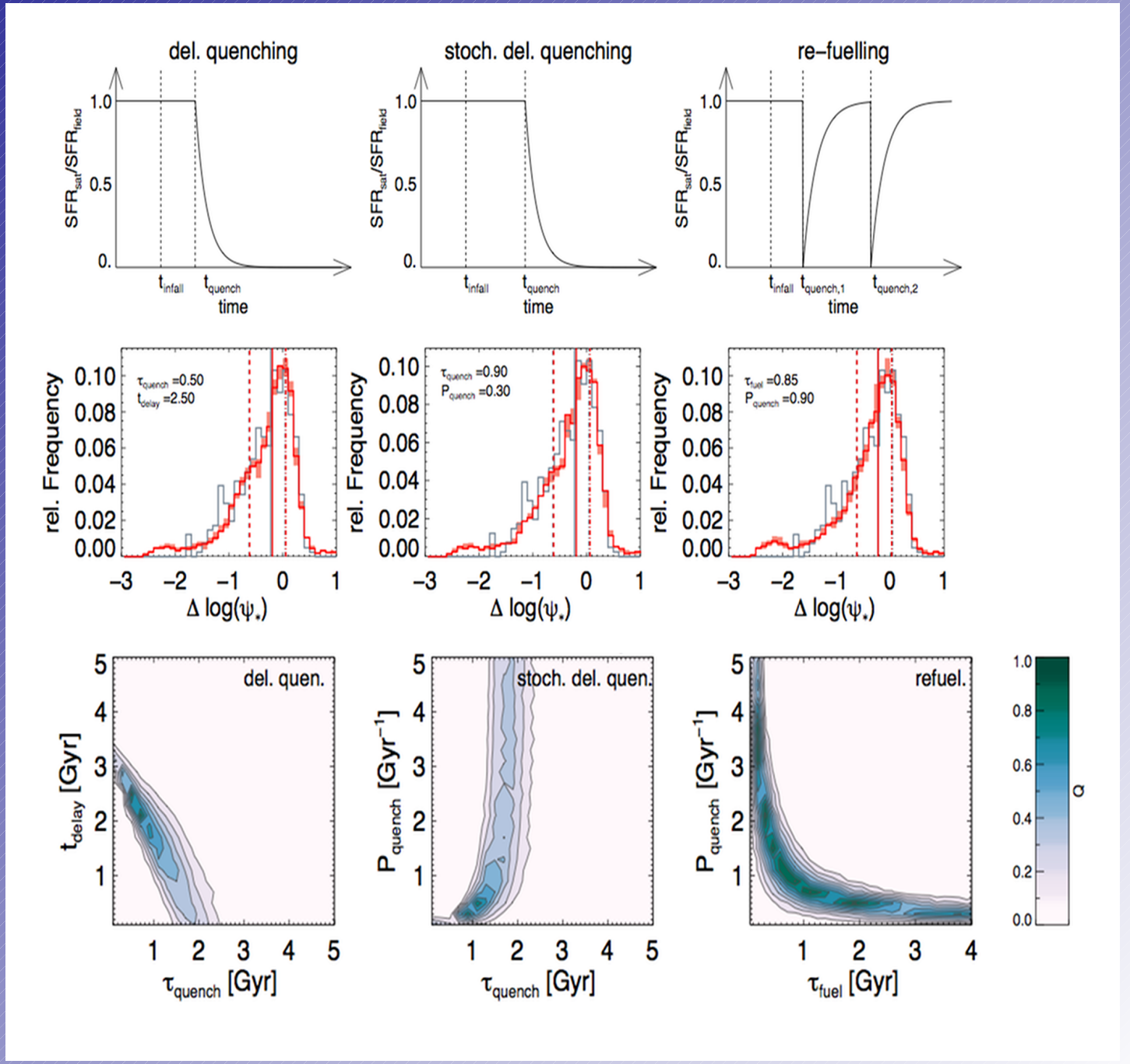
Prolonged Satellite Star Formation and External Gas Reservoirs

All models favour extended SF at the level of field galaxies and rapid quenching

Rapid cycle of gas with in-&outflows > SFR implied

Reservoirs of gas extraneous to galaxy/ISM needed to fuel SF.

Mass dependence of dsSFR and reservoir and stripping considerations favour IHM as source



Conclusions / Implications

Gas-fuelling on-going in (disk) satellites, largely independent of environment

Important/dominant contribution of fuelling from group intra-halo medium

Implies two phase IHM (hot/warm & cold phase)

This accretion of (zero net angular momentum) gas poses possible mechanism to transform morphology

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Morphology plays important role in determining SF activity

Color-density arises from morphology-density

Conclusions / Implications

Come have a look at my poster and check out the imminent paper on arXiv

Also check out the poster w.r.t the effect of central AGN on star formation in satellite galaxies