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От Сильченко О.К.

ArXiv: 2105.01123

The Resolved Sunyaev–Zel’dovich Profiles of Nearby Galaxy Groups

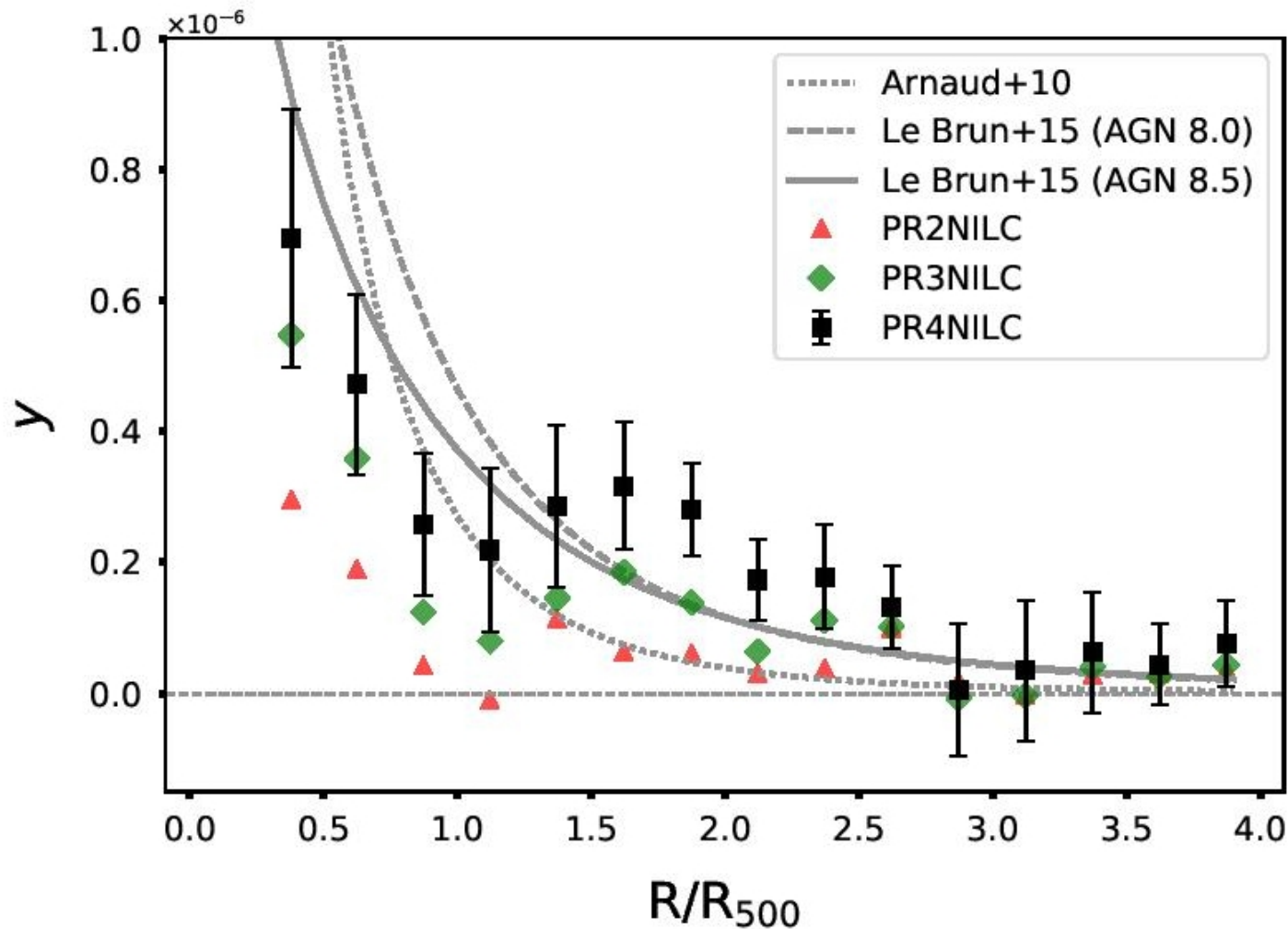
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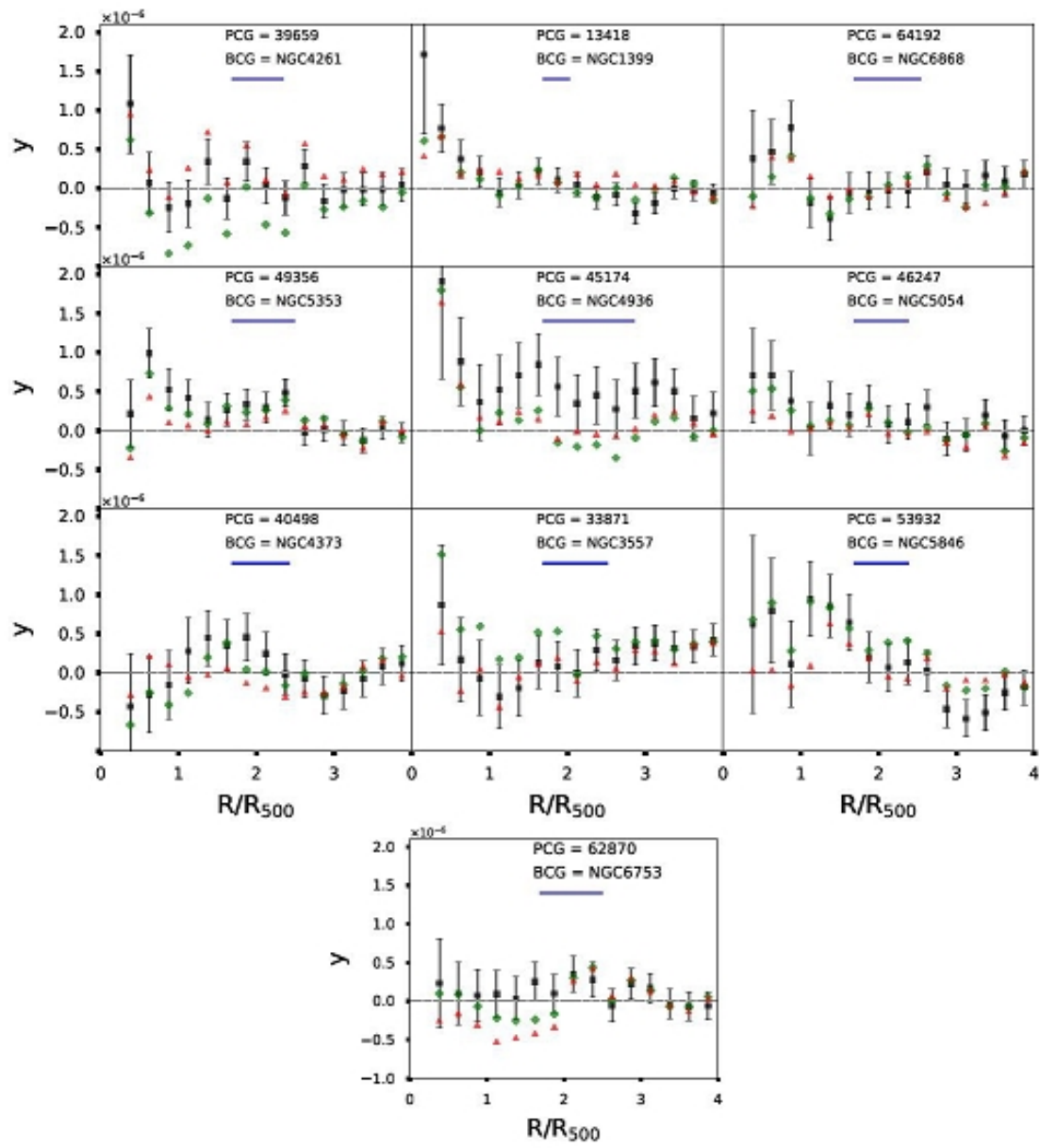
ABSTRACT

Much of the baryons in galaxy groups are thought to have been driven out to large distances ($\gtrsim R_{500}$) by feedback, but there are few constraining observations of this extended gas. This work presents the resolved Sunyaev–Zel’dovich (SZ) profiles for a stacked sample of 10 nearby galaxy groups within the mass range $\log_{10}(M_{500}[M_{\odot}]) = 13.6 - 13.9$. We measured the SZ profiles using the publicly available y -map from the Planck Collaboration as well as our own y -maps constructed from more recent versions of *Planck* data. The y -map extracted from the latest data release yielded a significant SZ detection out to $3 R_{500}$. In addition, the stacked profile from these data were consistent with simulations that included AGN feedback. Our best-fit model using the latest *Planck* data suggested a baryon fraction $\approx 5.6\%$ within R_{500} . This is significantly lower than the cosmic value of $\approx 16\%$, supporting the idea that baryons have been driven to large radii by AGN feedback. Lastly, we discovered a significant ($\sim 3\sigma$) “bump” feature near $\sim 2 R_{500}$ that is most likely the signature of internal accretion shocks.

По свежим данным Planck – сигнал уверенный до самого края



Индивидуальные профили



ArXiv: 2104.12794

From haloes to galaxies. III. The gas cycle of local galaxy populations

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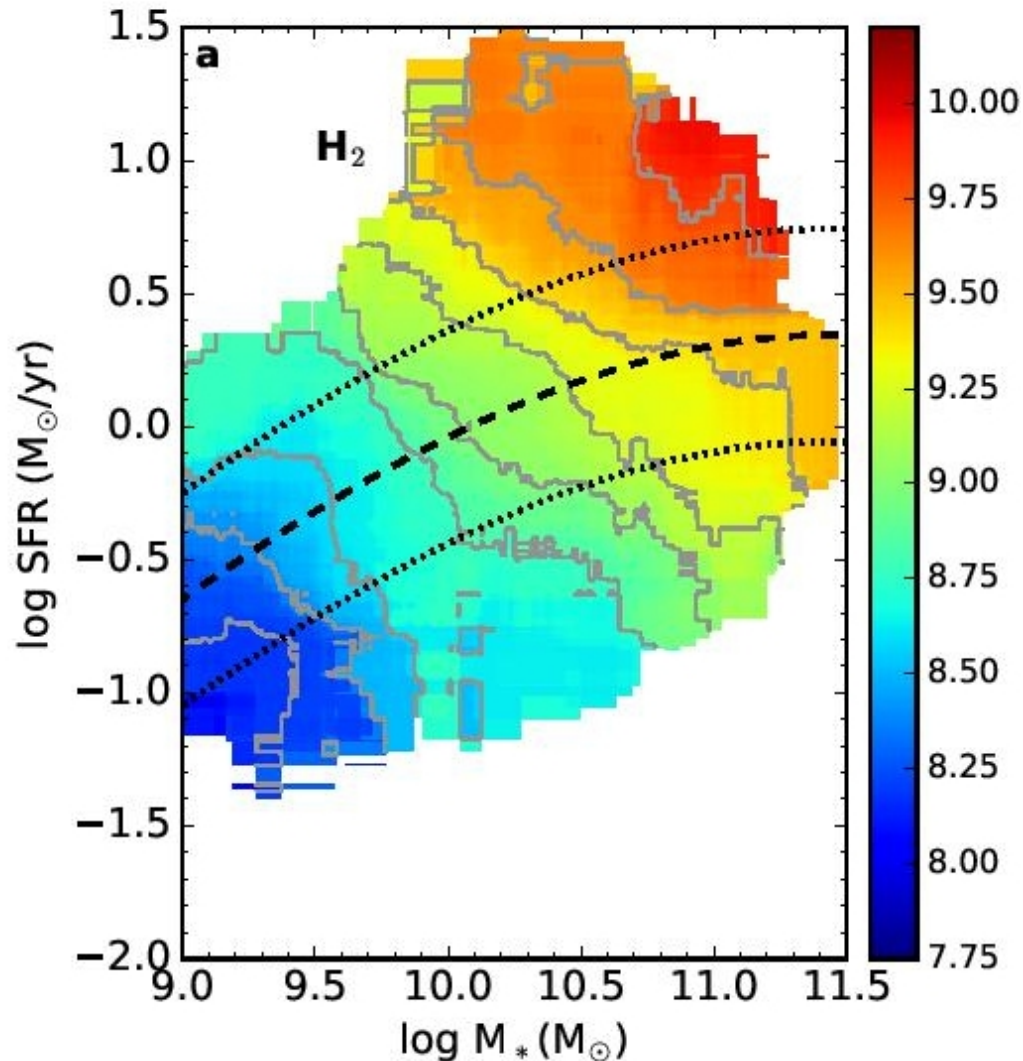
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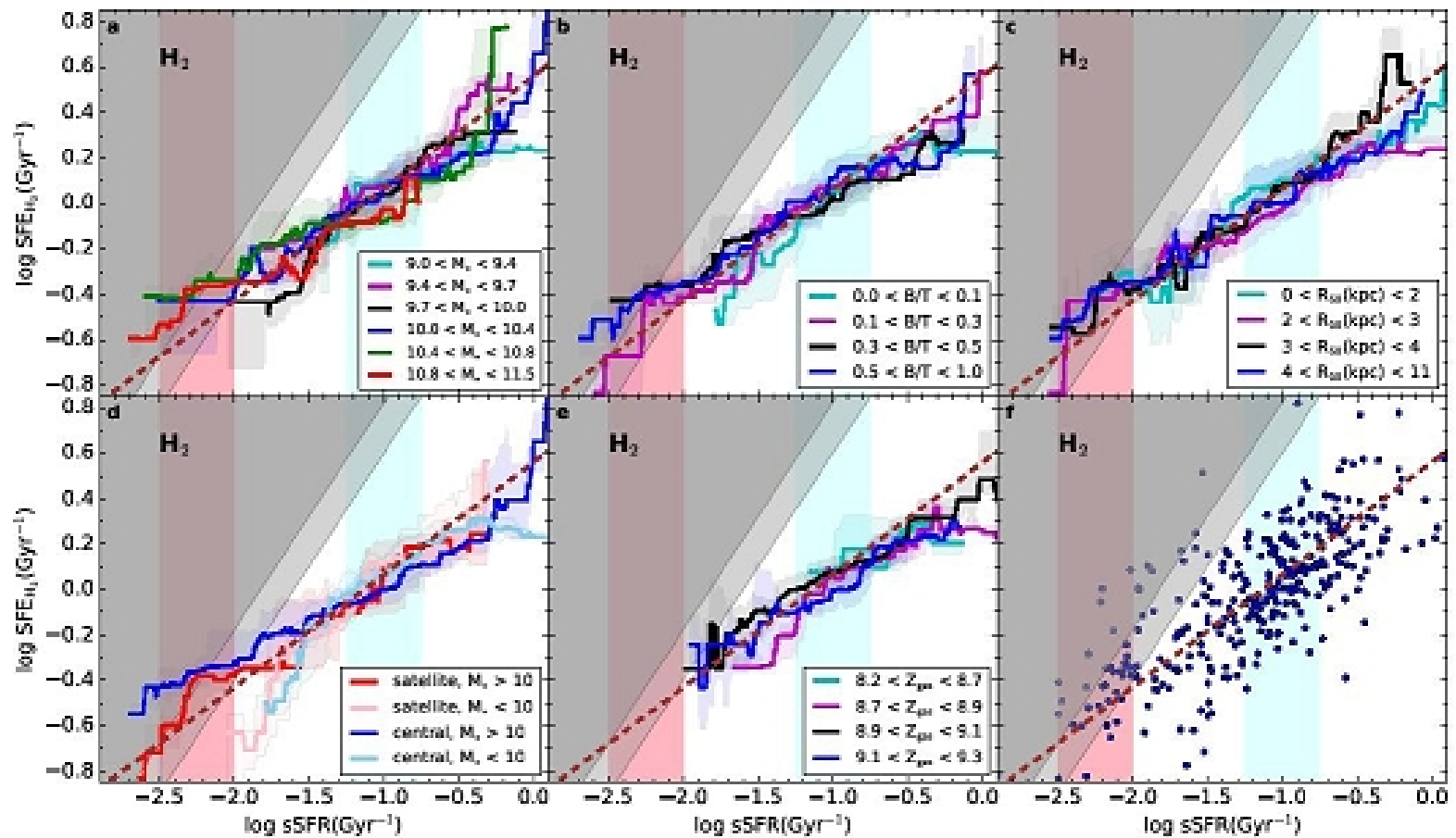
Выборка: xCOLD GASS, 330 галактик



FFR (Fundamental Formation...)

6

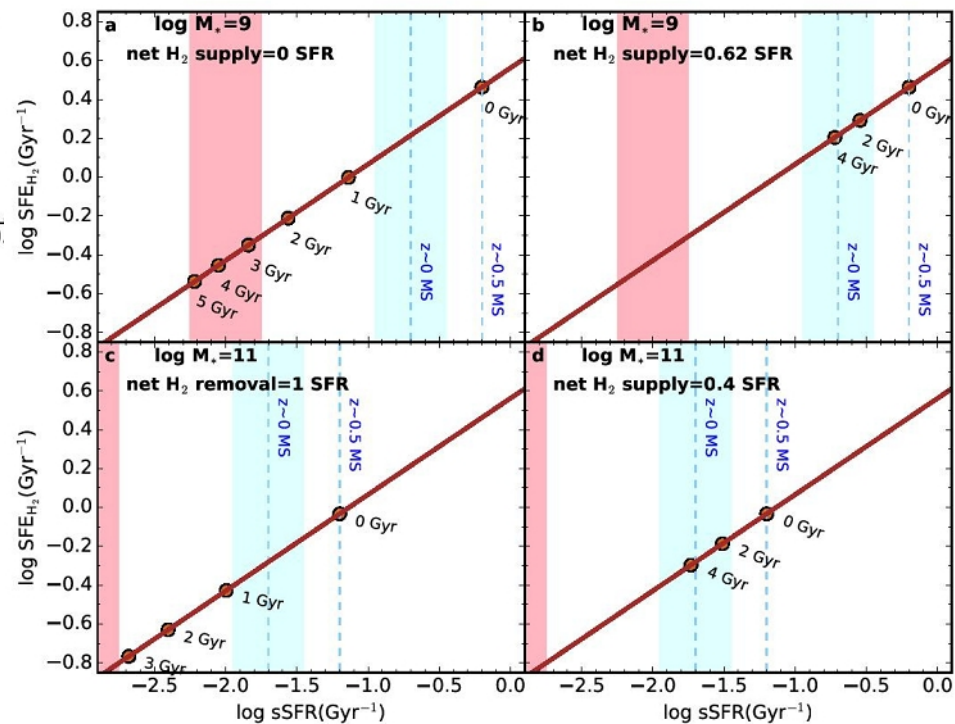
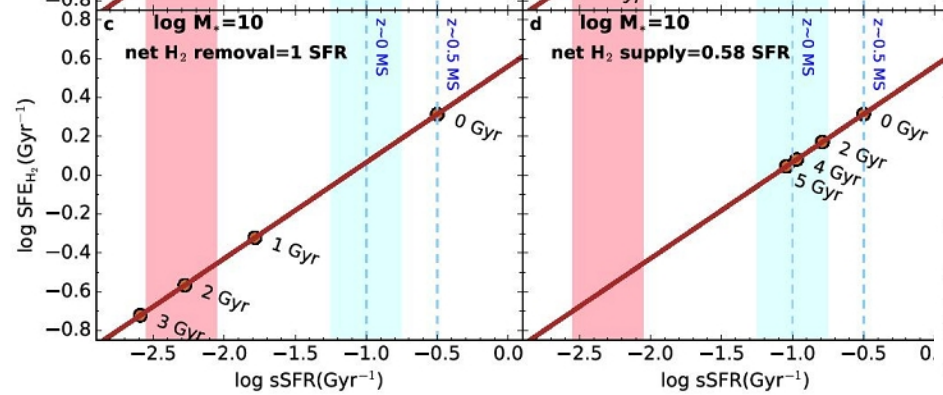
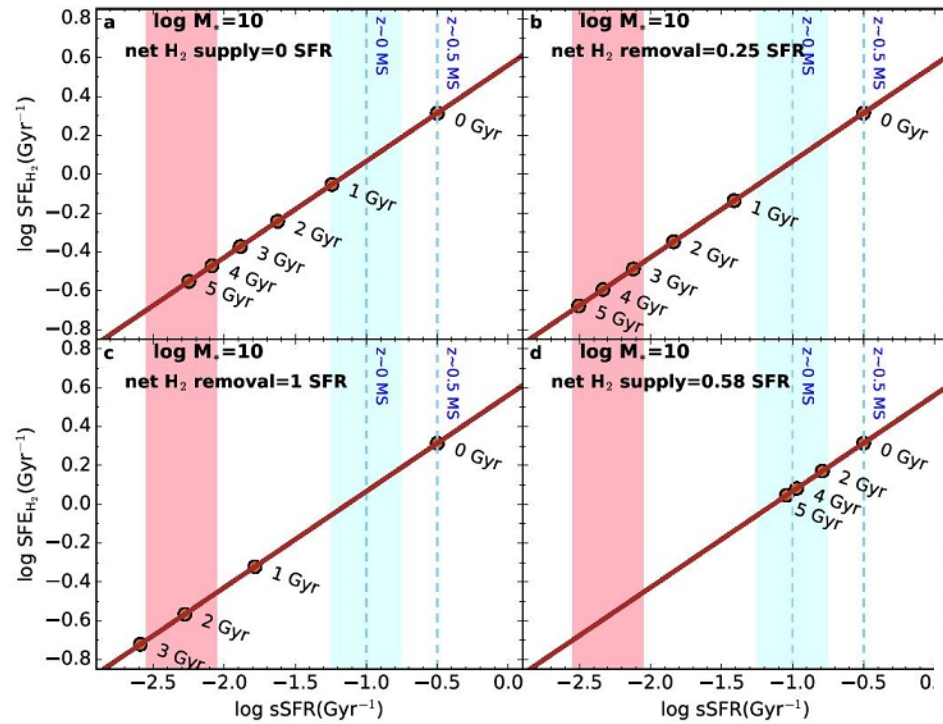
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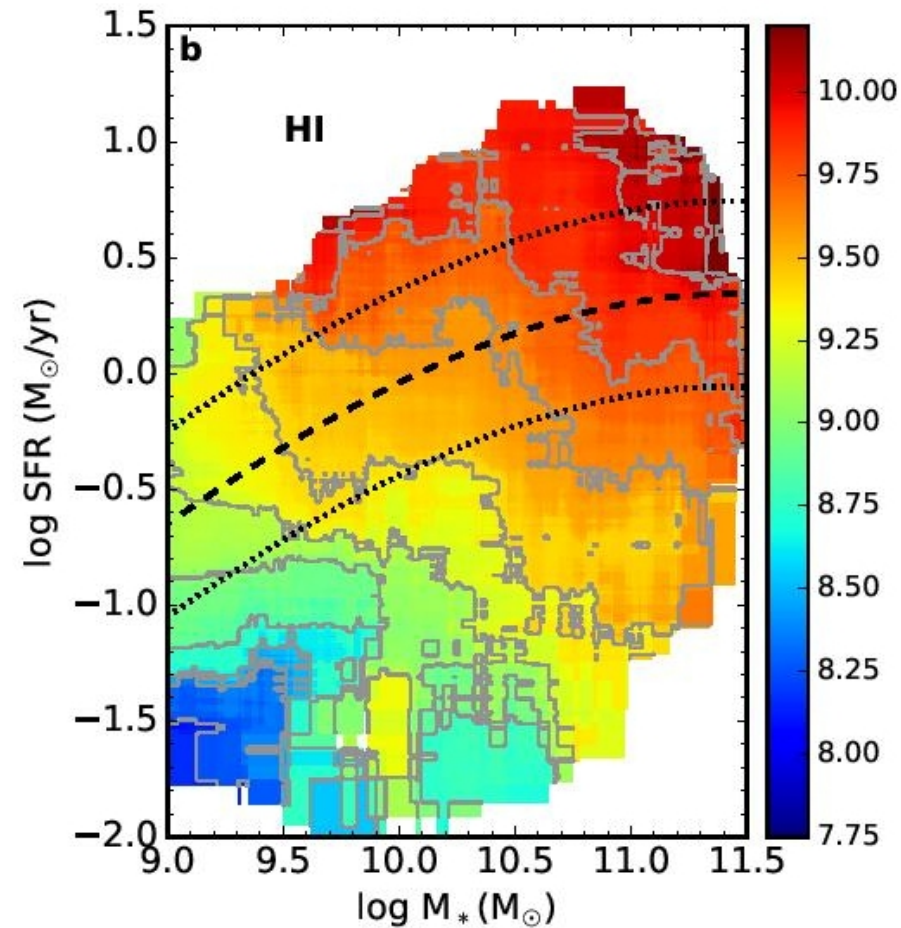
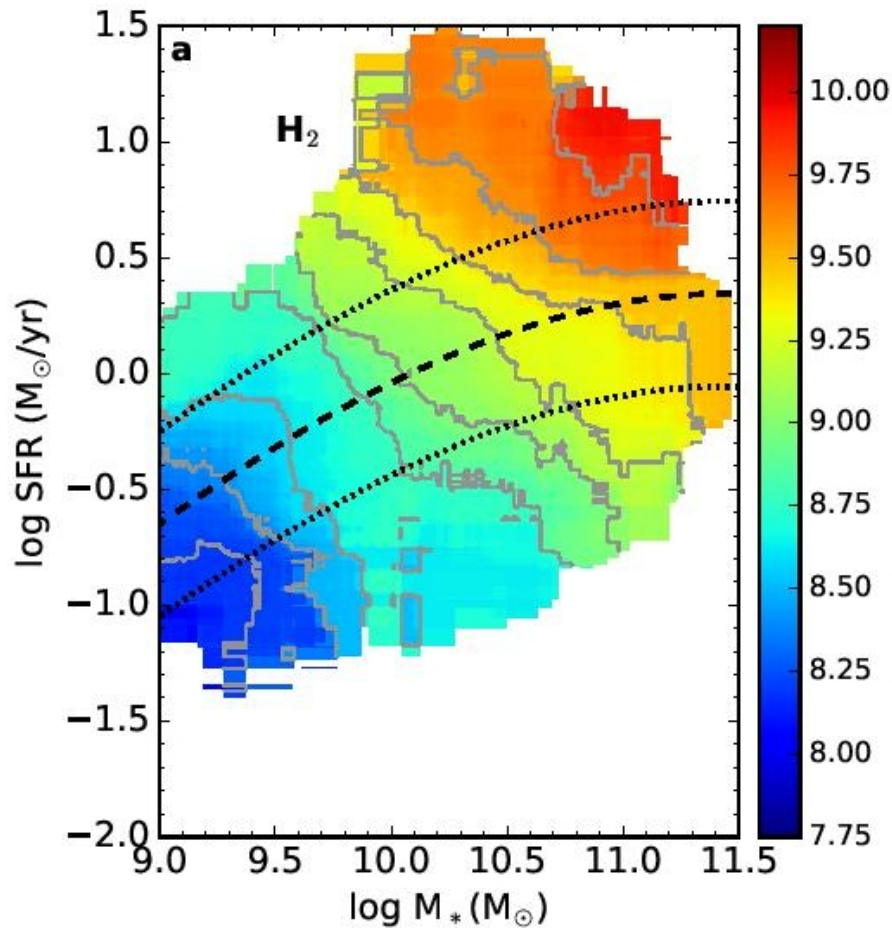
Обозначения и связи:

- $s\text{SFR} = \text{SFR} / M_*$
- $\text{SFE} = \text{SFR} / M(\text{H}_2)$
- $\log(\text{SFE}) = 0.5 \log(s\text{SFR}) + 0.56$
- $\forall \lambda = (\text{Supply-Removal}) / \text{SFR}$
- $d(M(\text{H}_2))/dt = (1 - (1-R)) \times \text{SFR} = (\lambda - 0.6) \times \text{SFE} \times M(\text{H}_2)$
- Эволюция – вдоль FFR
- Старт: задаем M_* , $z=0.5$
- Load-factor=const

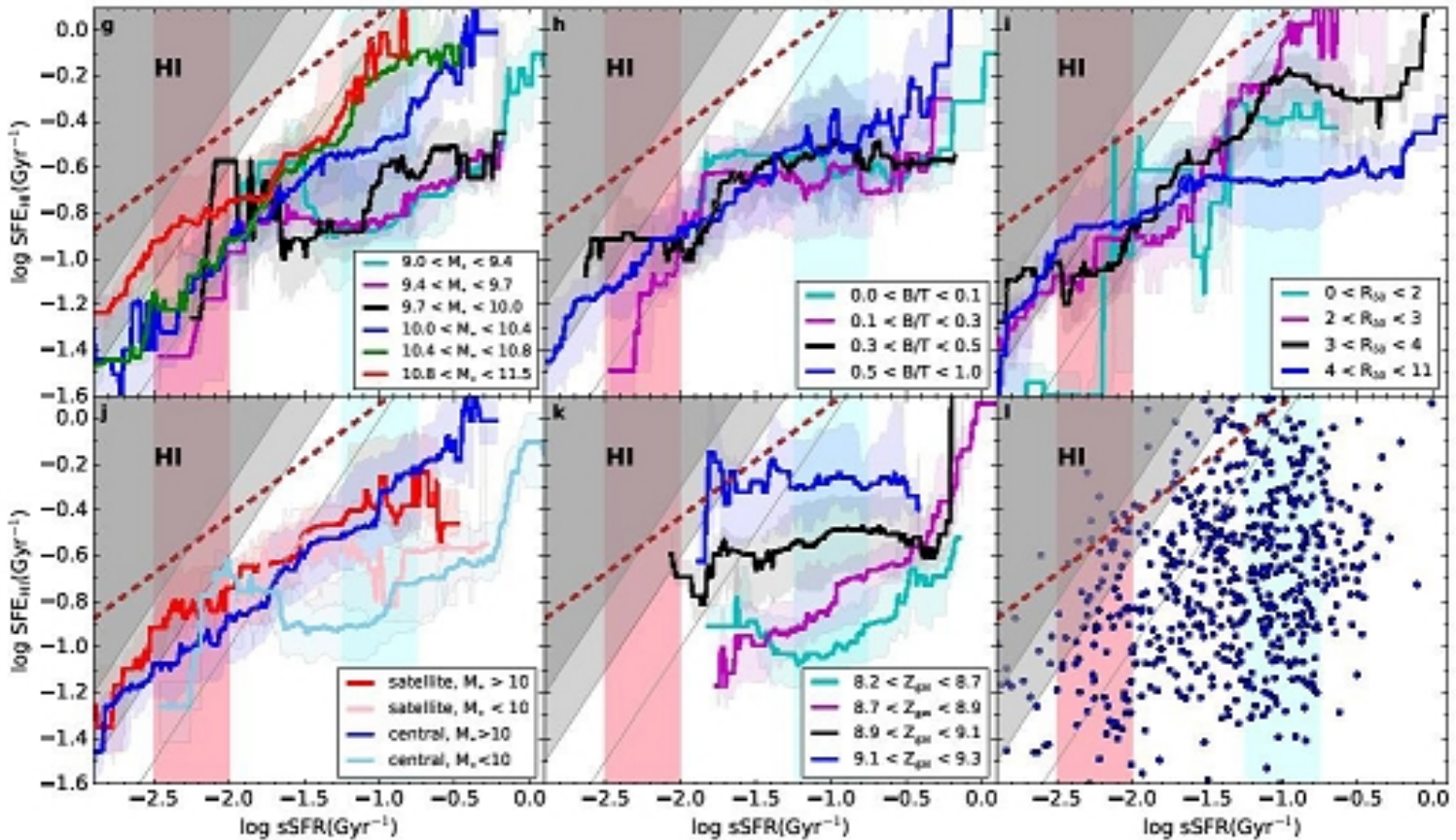
Эволюционные треки



Обещанный переход к HI



Для HI заветная FFR отсутствует!



Вывод:

- Эволюция содержания HI никак не связана с историей звездообразования.
- По-прежнему упирают на странгуляцию как главный фактор регулировки поставки МОЛЕКУЛЯРНОГО газа и остановки звездообразования.

Shortcomings=непонятки

- Постоянные отсылки к выводам работы I, где все базировалось на SDSS/DR7: металличность, SFR, ...
- Если мы переходим к молекулярному газу – причем тут странгуляция? Обилие молекулярного газа весьма слабо связано с притоком нейтрального водорода...
- И все-таки, почему постоянен load-factor для индивидуальных галактик? Как раз последние 4 млрд лет – время сборки скоплений...
Окружение меняется!