O'Donnell+1994 to Calzetti+2000

When calculating the gas $E(B-V)$, I previously adopt the same approach as Belfiore et al. (2023), i.e., $k_{H_\beta} = 3.609$ and $k_{H_\alpha} = 2.535$, with $R_V = 3.1$. However, in `nGIST`, we adopt Calzetti-like extinction curve, so now I change to $k_{H_\beta} = 3.609$ and $k_{H_\alpha} = 2.535$, with $R_V = 4.05$.

Kroupa to Chabrier

I look at the Figure 4 of Madau & Dickson (2014) and it turns out that converting SFRs from Kroupa to Chabrier IMF is 0.63/0.67. `nGIST` adopts Chabrier IMF in SPS templates and SFR coefficient $C_{H\alpha} = 5.3 \times 10^{-42}$ from Calzetti et al. (2007) adopts Kroupa, so I times that constant to keep consistency.

Pipeline

I have done converting my previous `.ipynb` to an automatic and universal `.py` to create stellar mass and SFR map.

Stellar mass map and relevant properties are stored in `*_SPATIAL_BINNING_maps_extended.fits` (an extended version of original `_SPATIAL_BINNING_maps.fits`).

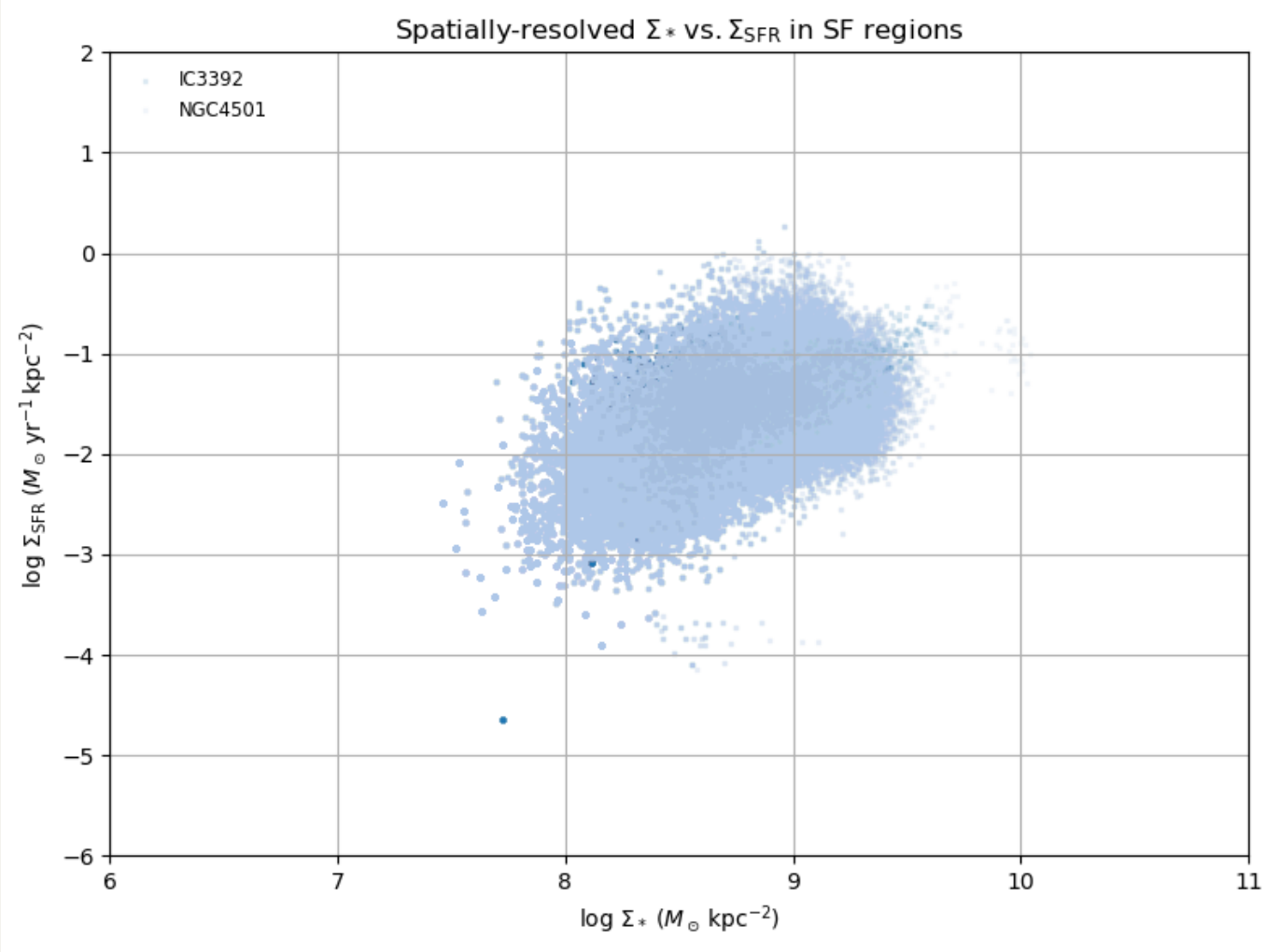
SFR map and relevant properties are stored in `*_gas_BIN_maps_extended.fits` (an extended version of original `_gas_BIN_maps.fits`).

All are located at `/home/RongjunHuang/ICRAR/extended` on CANFAR.

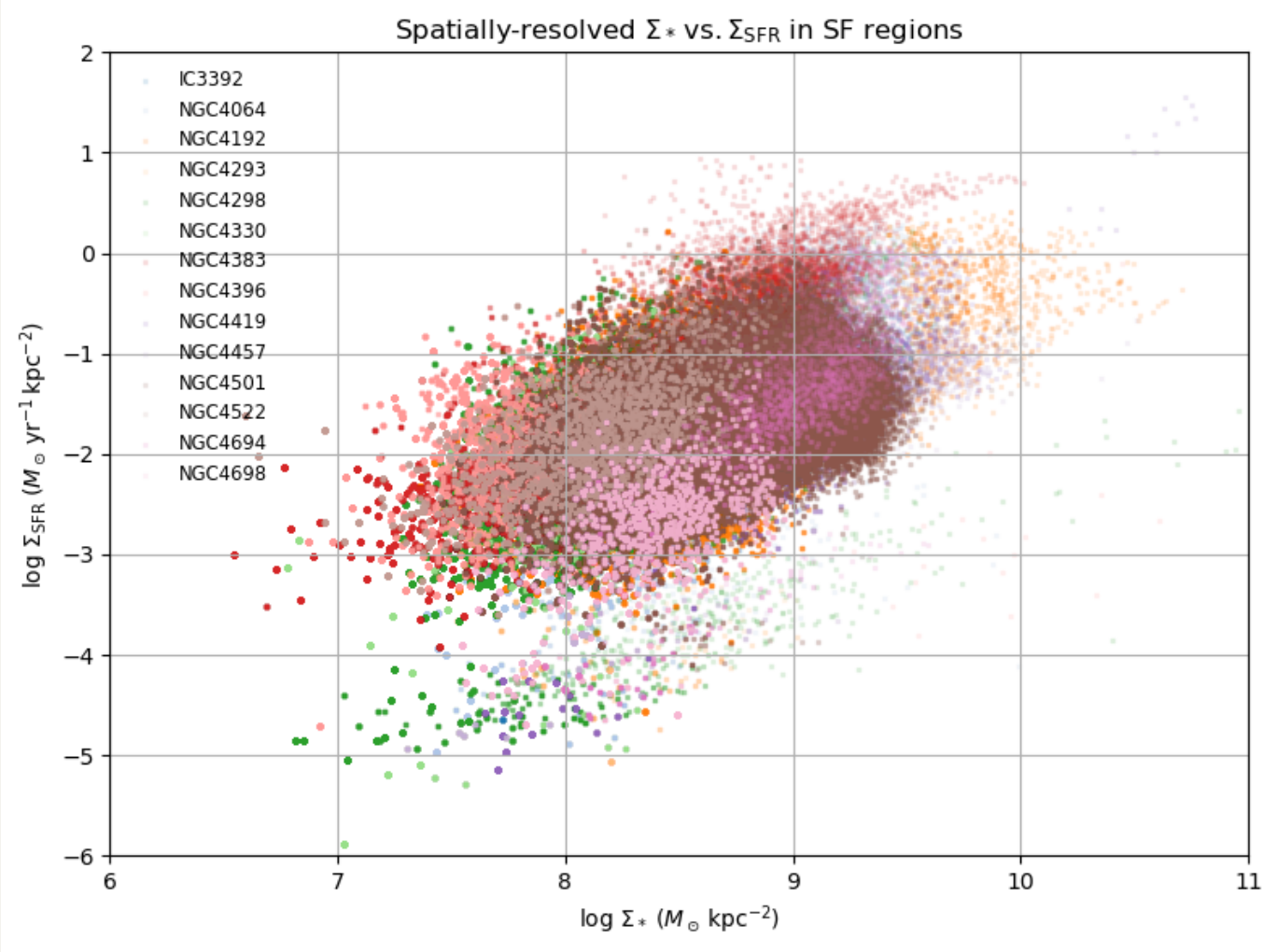
Spatially-resolved Σ_* vs. $\Sigma_{\rm SFR}$ in SF regions

Now I can create Spatially-resolved Σ_* vs. $\Sigma_{\rm SFR}$ in SF regions

First, for IC3392 (hide in the bottom) and NGC4501:



Then, for all 14 galaxies


Spatially-resolved Σ∗ vs. ΣSFR in SF regions
IC3392
NGC4064
NGC4192
NGC4293
NGC4298
NGC4330
NGC4383
NGC4396
NGC4419
NGC4457
NGC4501
NGC4522
NGC4694
NGC4698
log ΣSFR (M⊙ yr−1 kpc−2)
log Σ∗ (M⊙ kpc−2)
2
1
0
−1
−2
−3
−4
−5
−6
6
7
8
9
10
11