

# 20250526 IC3392 Legacy vs MAUVE

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From now on, all the distance set to 16.5 Mpc.

## 1. Reprojected Legacy data

In order to have a fair comparison between Legacy and MAUVE data, I need to make sure they are in the same size, same pixel scale and same voronoi binning. Here I use `reproject_exact` for this transformation.

Then I use the same procedure as before to extract the corrected r-band magnitude, stellar mass and  $M/L_r$  map:

1. Galactic extinction.  $E(B-V) = 0.0369$  from Corteste et al. 2012 and  $A/E(B-V) = 2.165$  from Legacy data description.
2. Isophotal mask. Though it does not change anything here.
3. Galaxy contour. Though it does not change anything here.
4. r-band magnitude map. I convert nanomaggies to r-band magnitude.
5. Stellar mass map. I use g-i map and calibration from Taylor et al. 2011 to get stellar mass.
6.  $M/L_r$  map. With r-band luminosity and stellar mass map, I can calculate the  $M/L$  in r-band.

## 2. MAUVE data

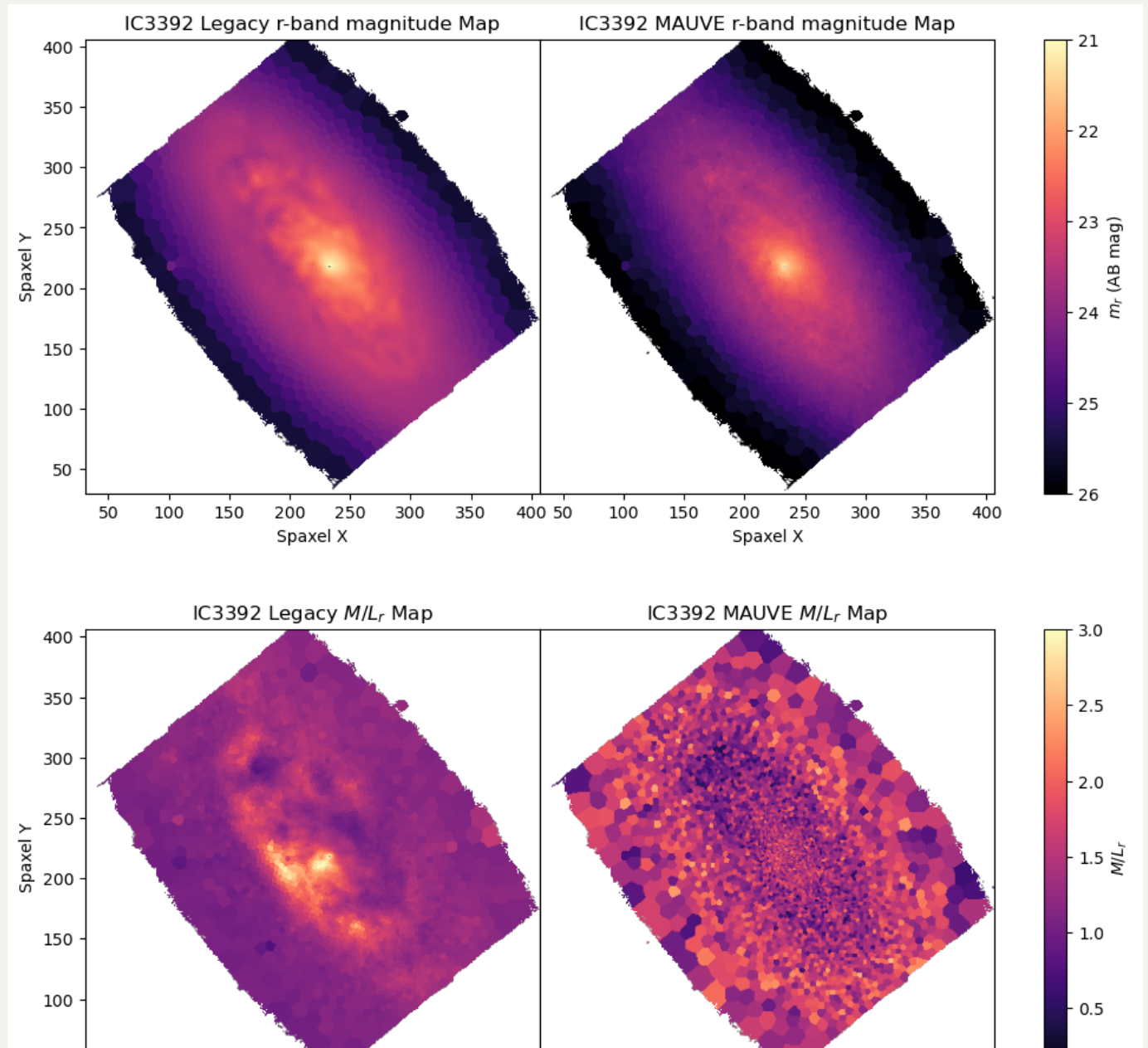
The way to deal with MAUVE data is different:

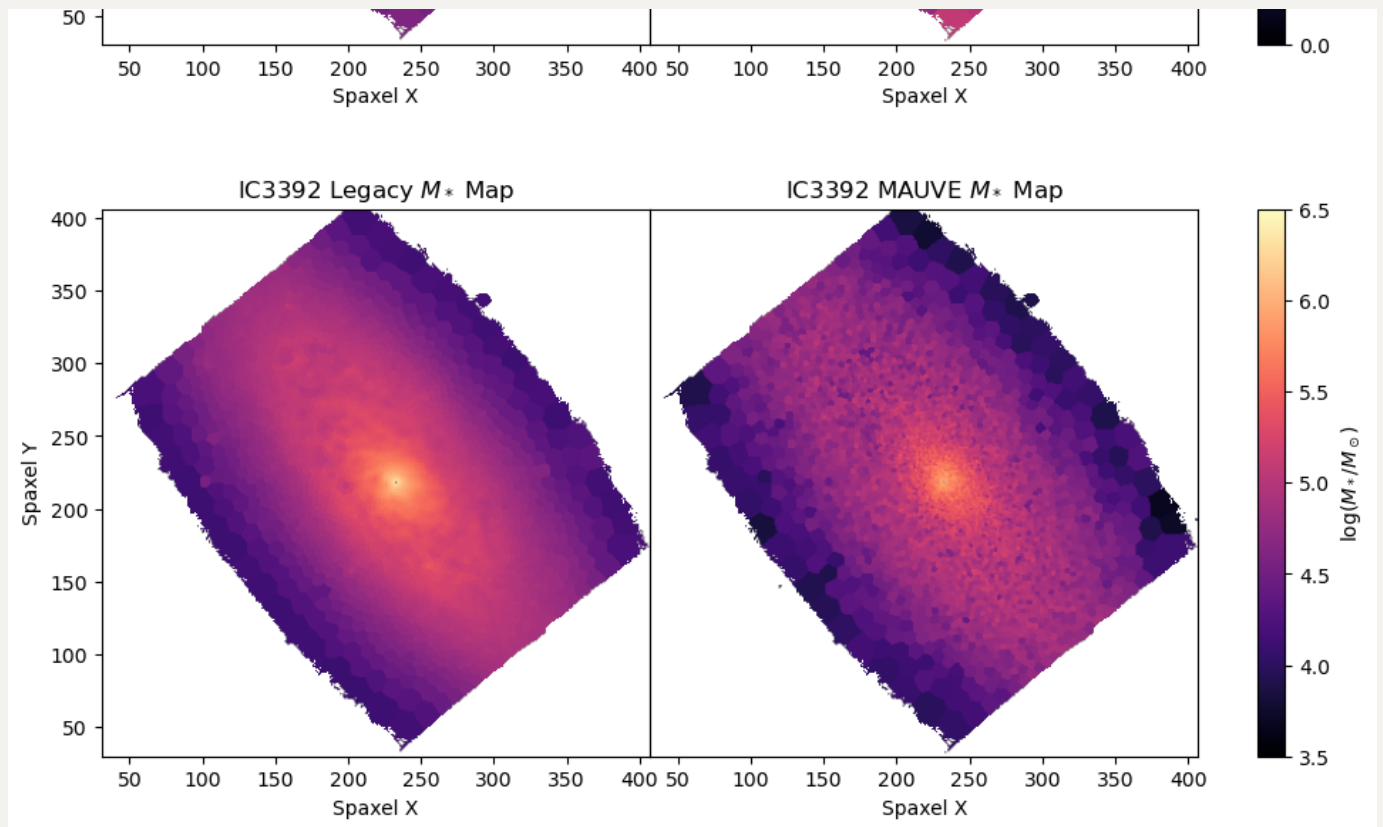
1.  $M/L_R$  map. As described last week, I use the predicted table provided on [MILES website](#) to extract the  $M/L$  in R-band. **I need to point out that the R-band here is Cousins filters (SDSS filters are provided in E-MILES table).**

2. Galactic extinction. E(B-V) map is provided by `IC3392_SFH_maps.fits`. According to Table 6 of [Schlafly & Finkbeiner 2011](#), I use  $A/E(B-V) = 2.285$  for SDSS r-band at  $R_V = 3.1$ .
3. r-band magnitude map. I use `speclite.filters` and specify `sdss2010-r` filter to get r-band magnitude of MAUVE data.
4. Stellar mass map. With r-band luminosity and  $M/L_R$  map, I can calculate the stellar mass.

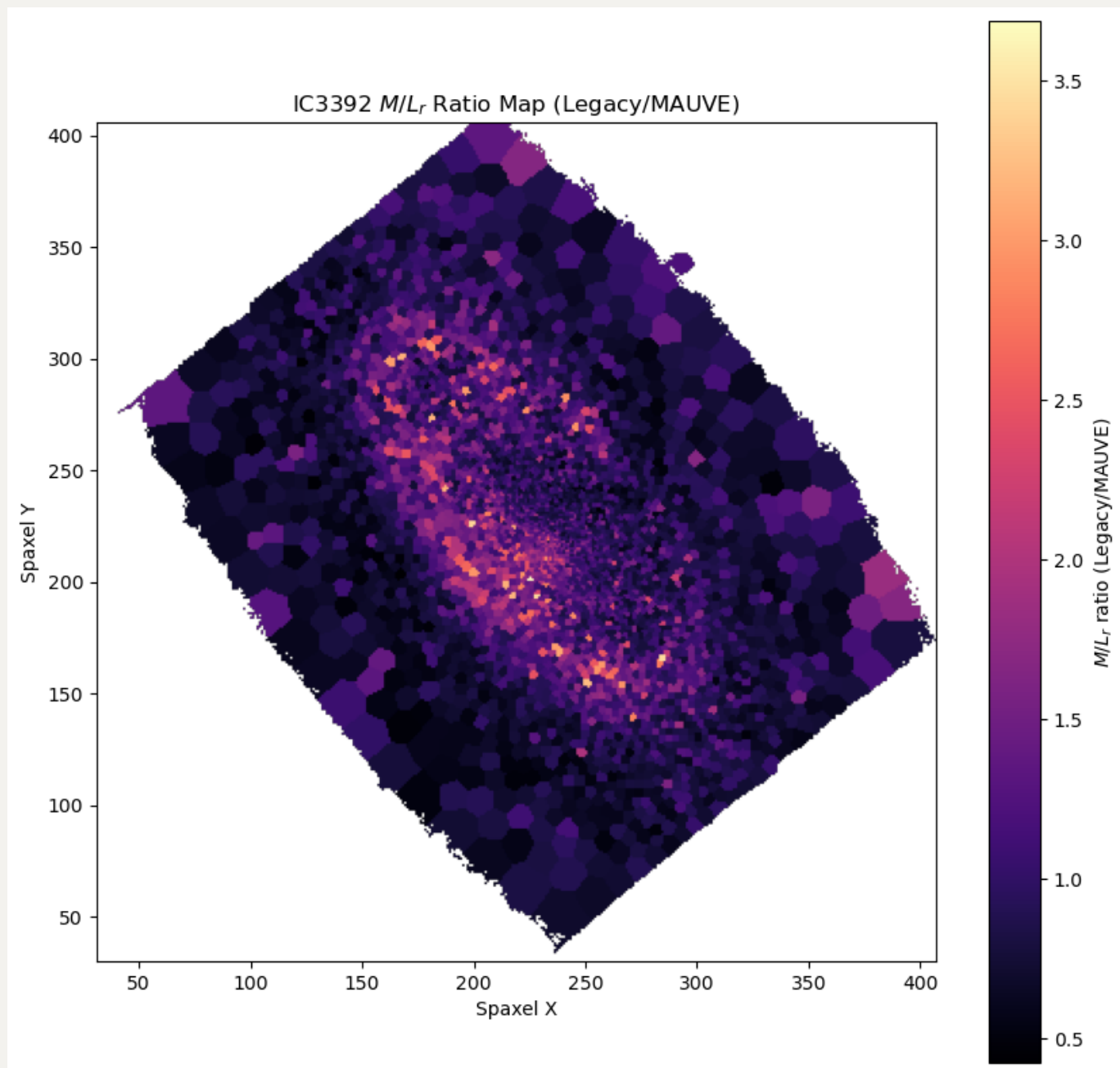
### 3. Comparion

Here I show the corrected r-band magnitude,  $M/L_r$  and stellar mass map from Legacy and MAUVE data.

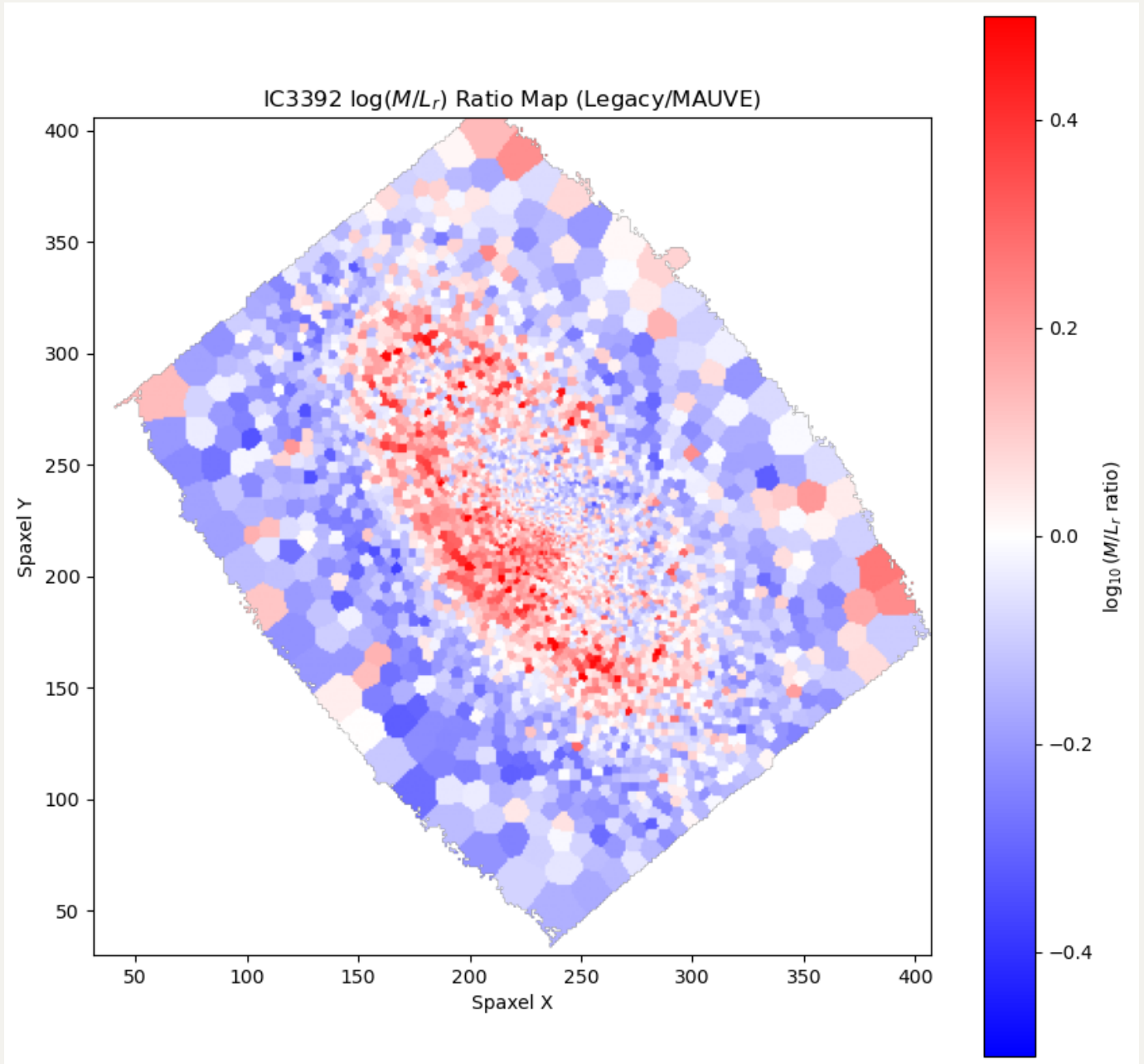




Then I further make a r-band M/L ratio map.



or in log scale:



It seems that Mass-to-Light Color Relation (MLCR) tends to predict older population in star-forming regions (the inner elliptical structure) than `pPXF`, and vice versa for outer regions.