



Milky-Way-like radial structure in nearby galaxies

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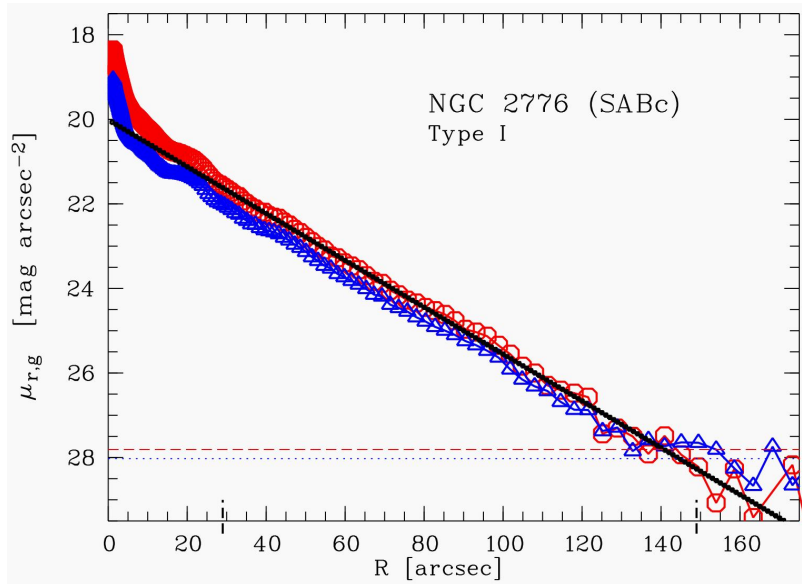
Supervisor: Jianhui Lian (连建辉)

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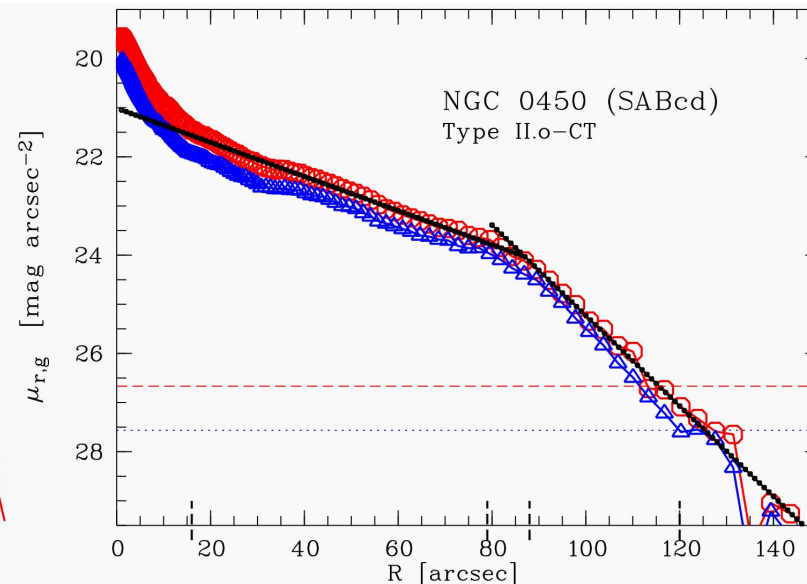
1.Introduction

Galaxies's Radial Structure: Surface Brightness Profile

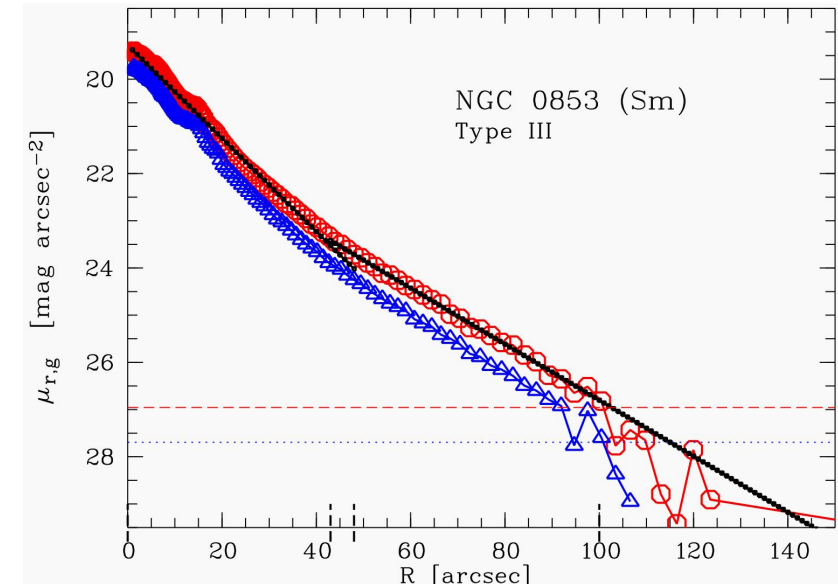
11%



66%



32%

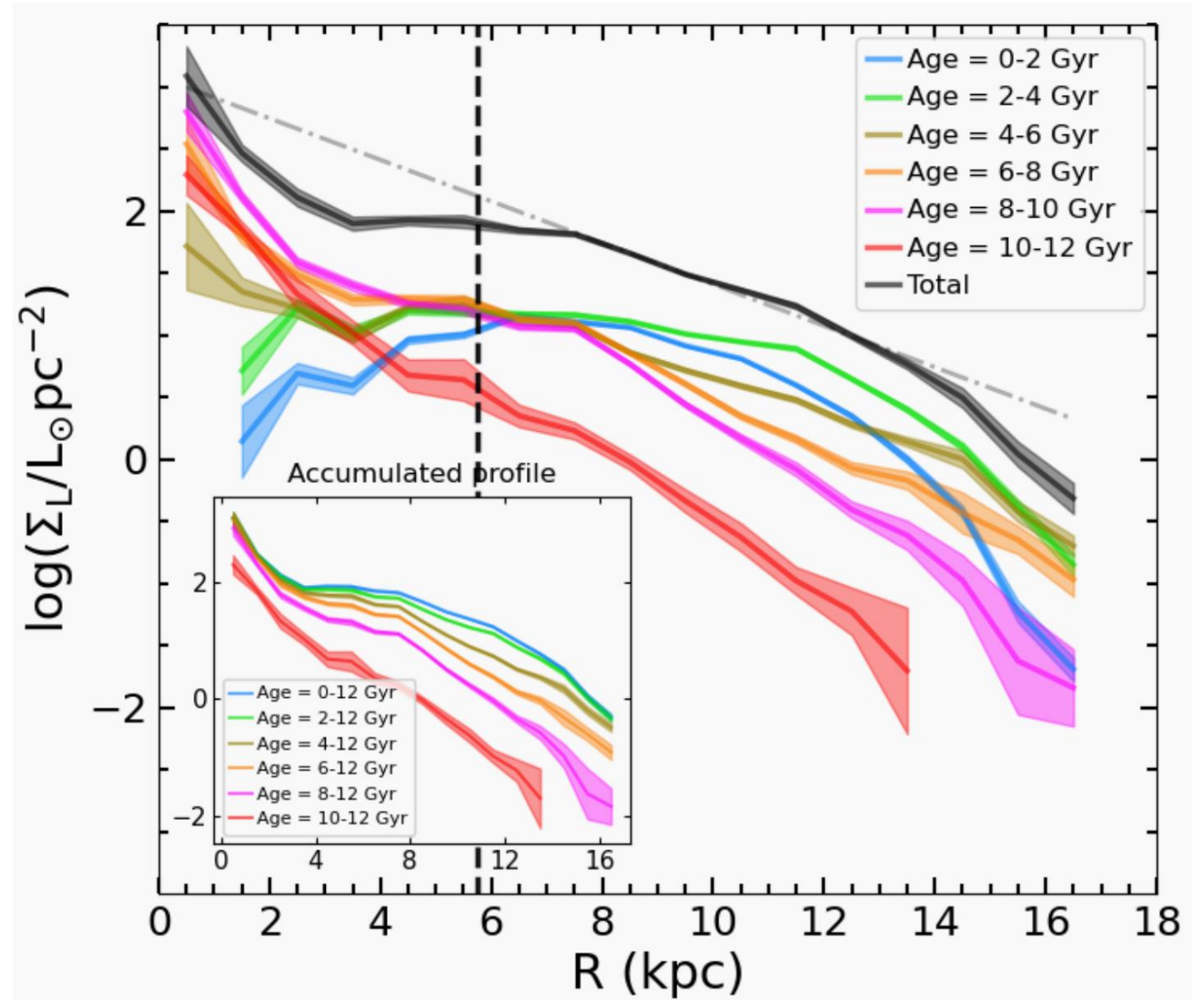


(Pohlen et al.,2006)

1.Introduction

Milky-Way galaxy : **flat** region (4 - 8 kpc)

Galaxies have **flat** region: **rare** in nearby galaxies. (find **26** in **5000** galaxies)



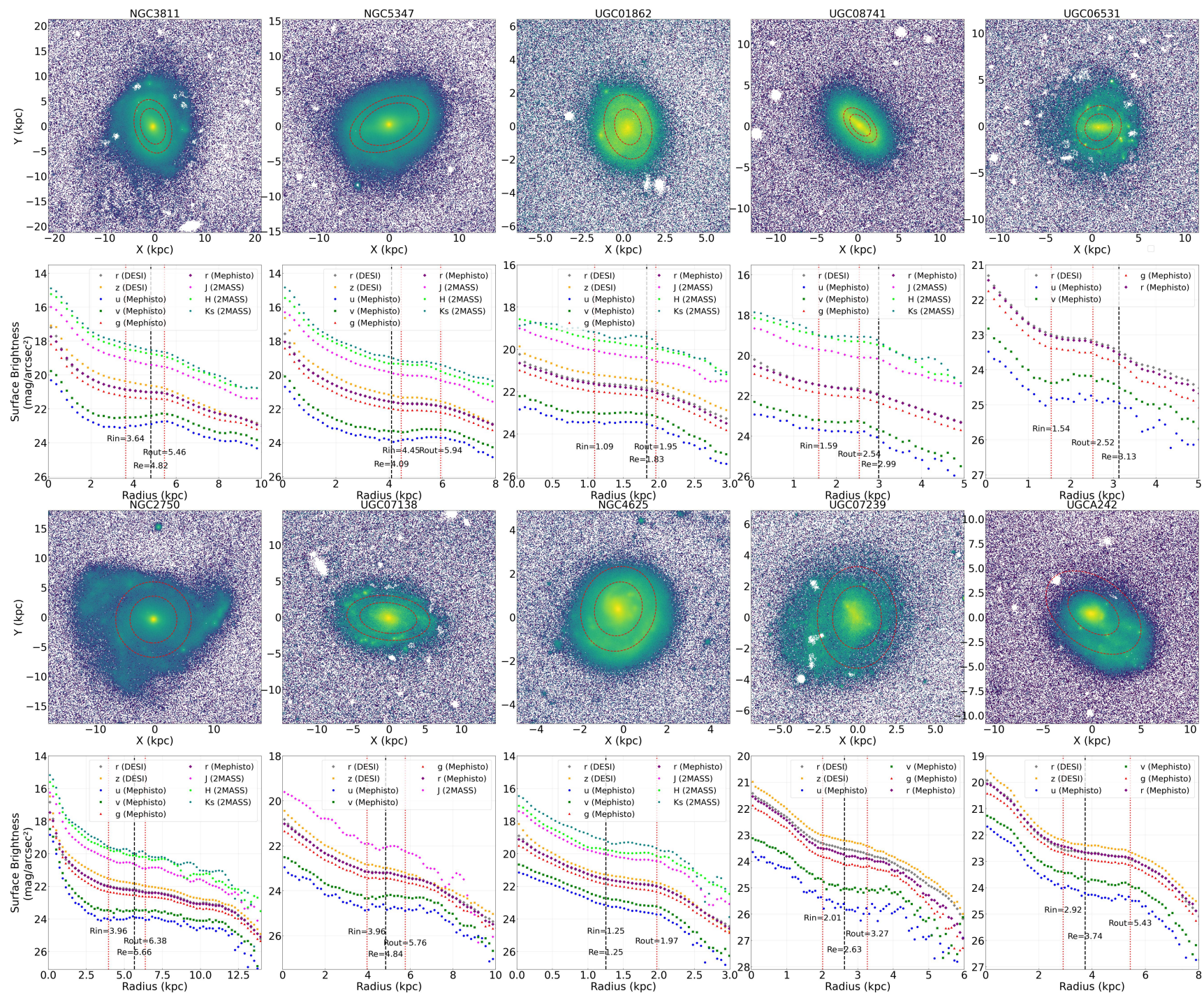
(Lian et al.,2024)

2.sample

Data:

Mephisto(u,v,g,r)
2MASS(J,H,Ks)
DESI(r,z)

Sample:
disk
bar

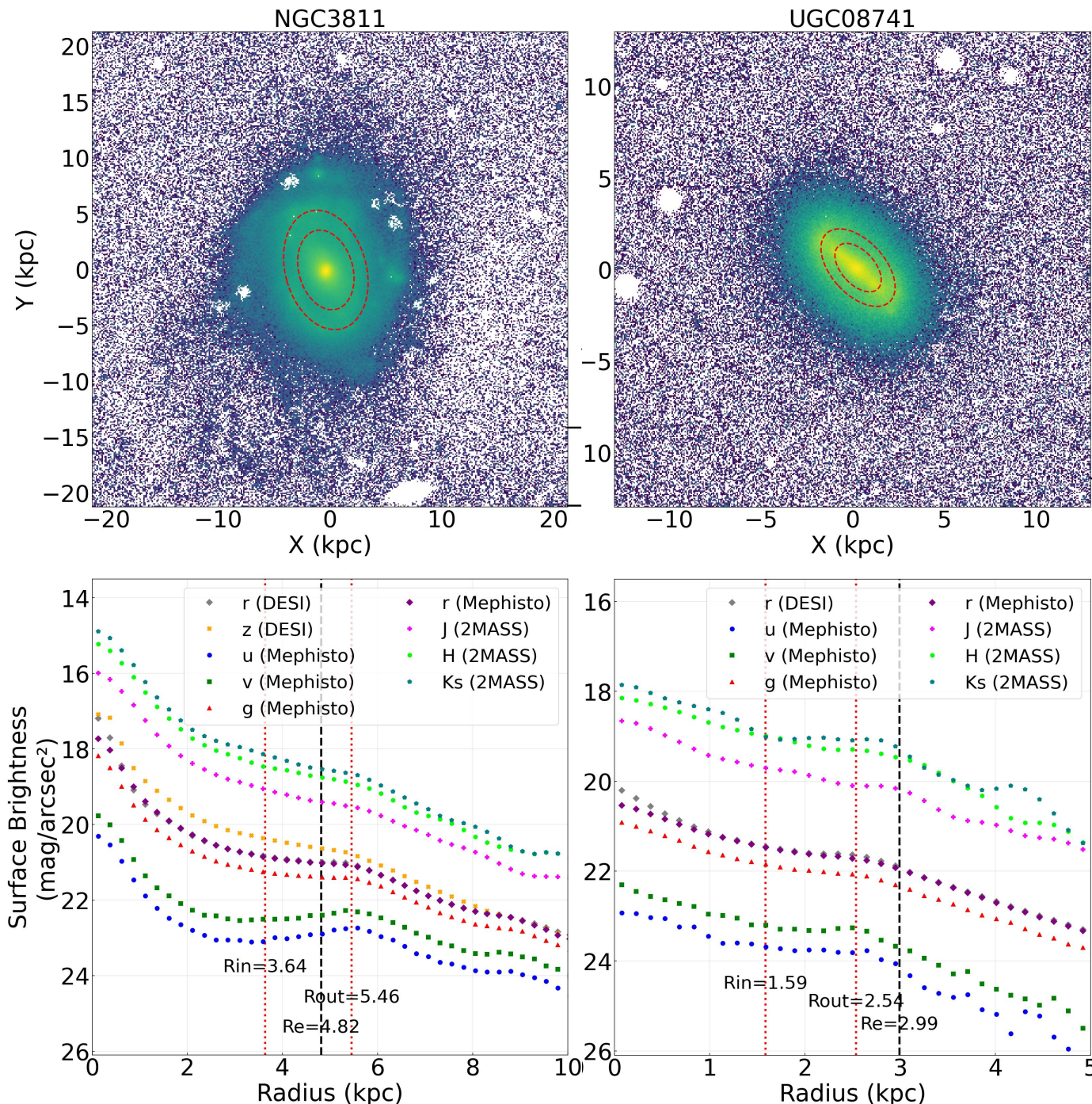


3.profile structure

red elliptical ring: flat region

same:
flat shown outside the bar (image)

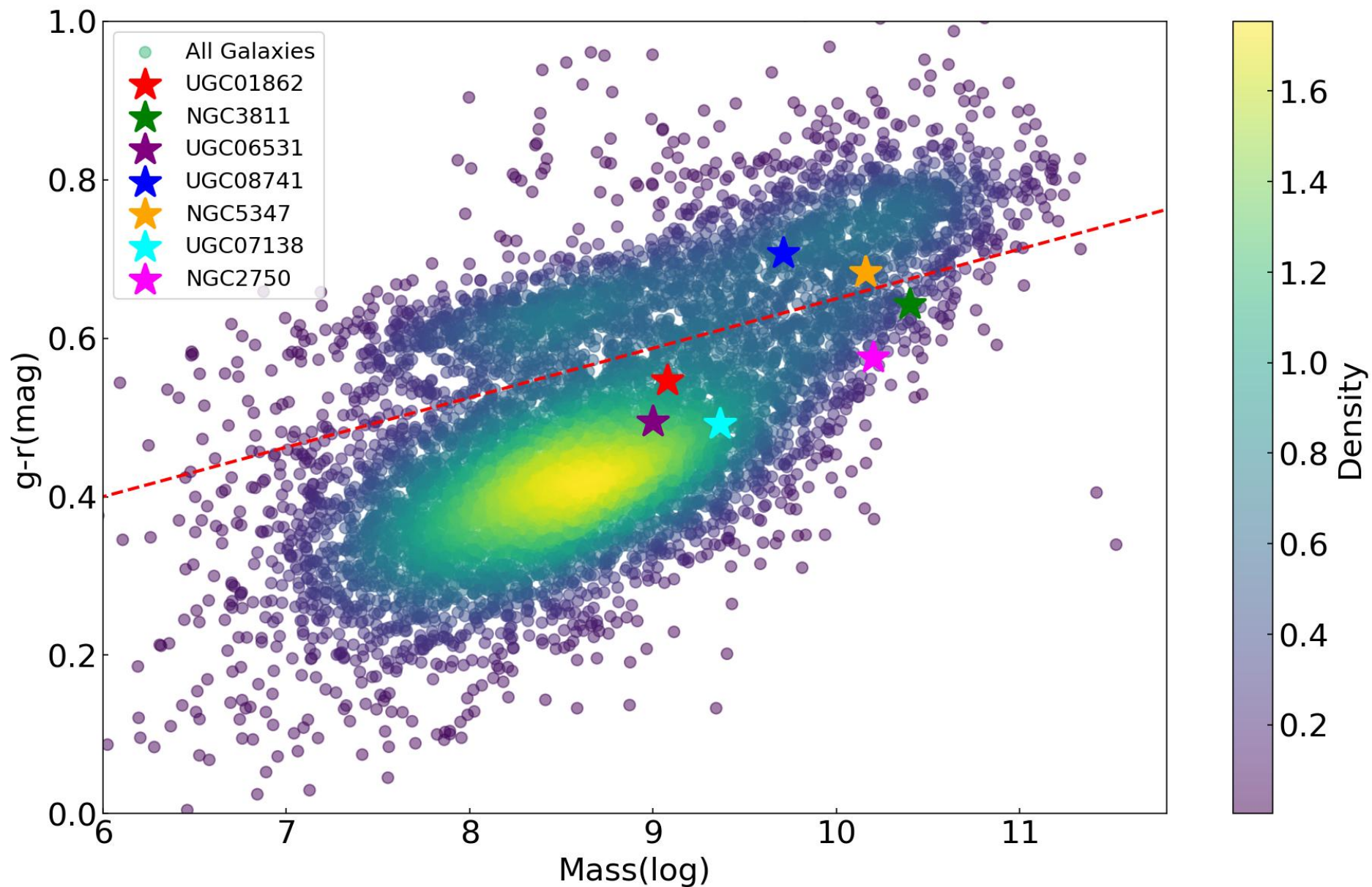
different:
falt region' slope **varies/not varies**
obviously with the band (profile)



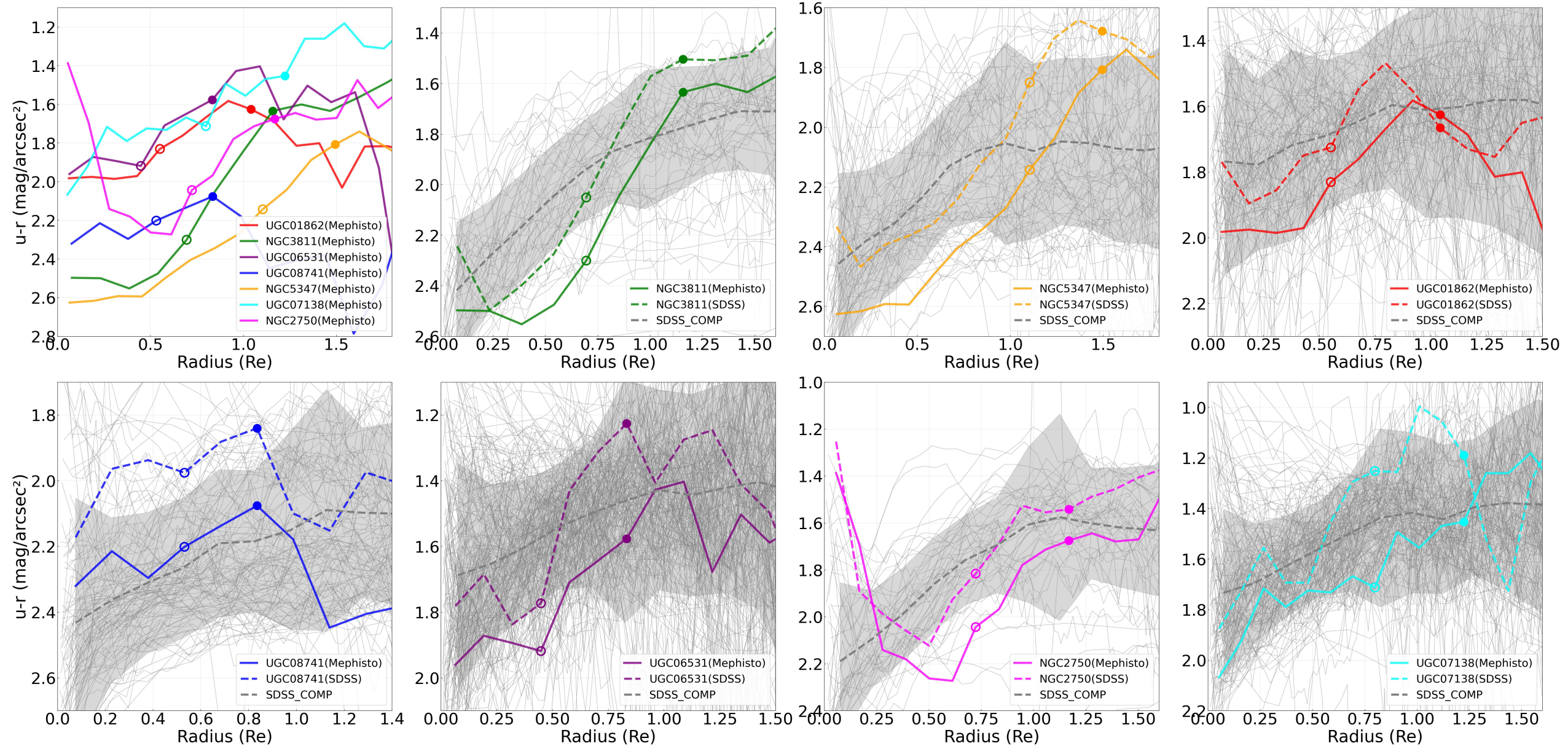
4.color distribution

catalog from
(Ohlson et al., 2024)

red line:
below: spiral
upper: elliptical

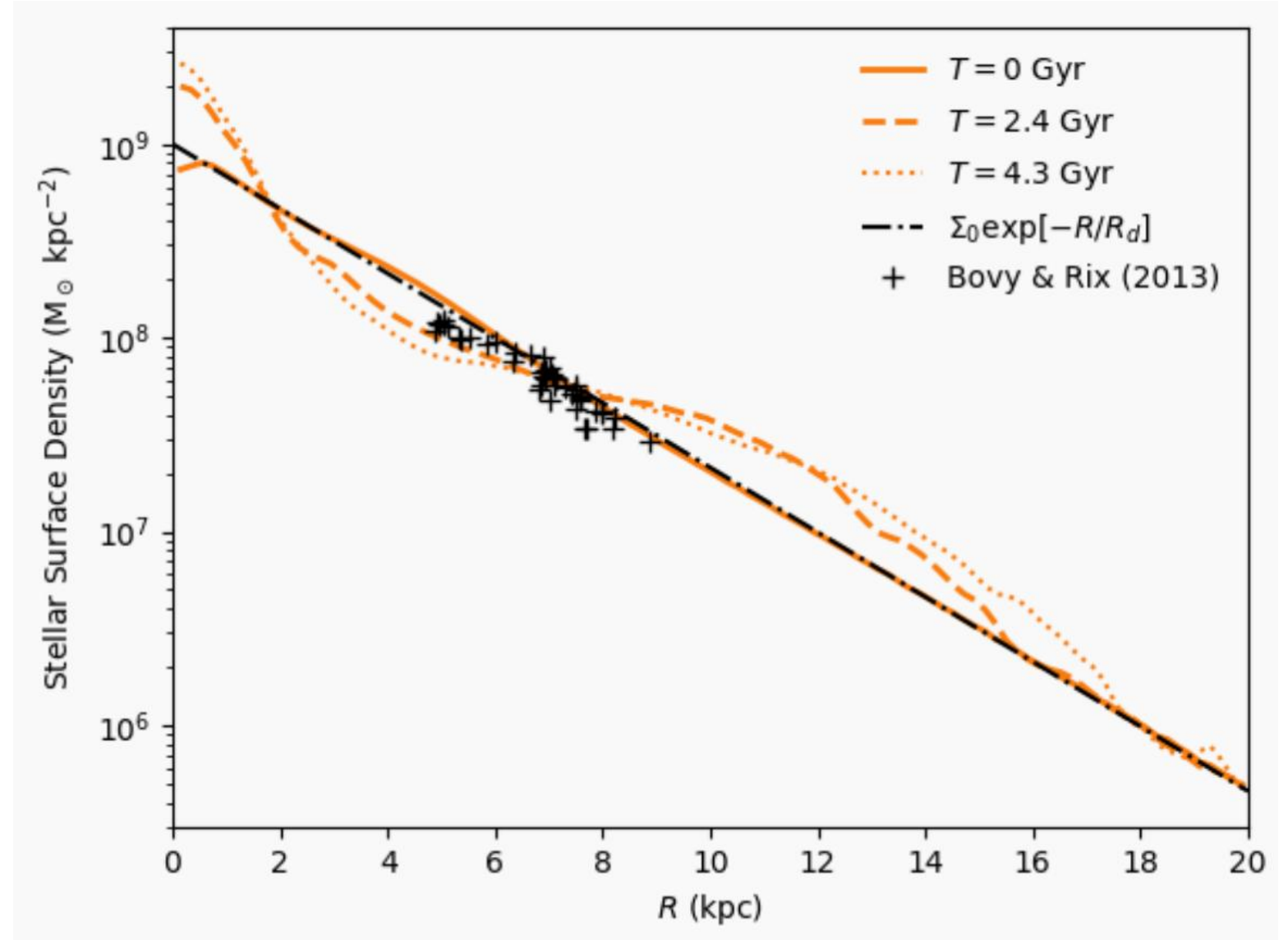


4.color distribution



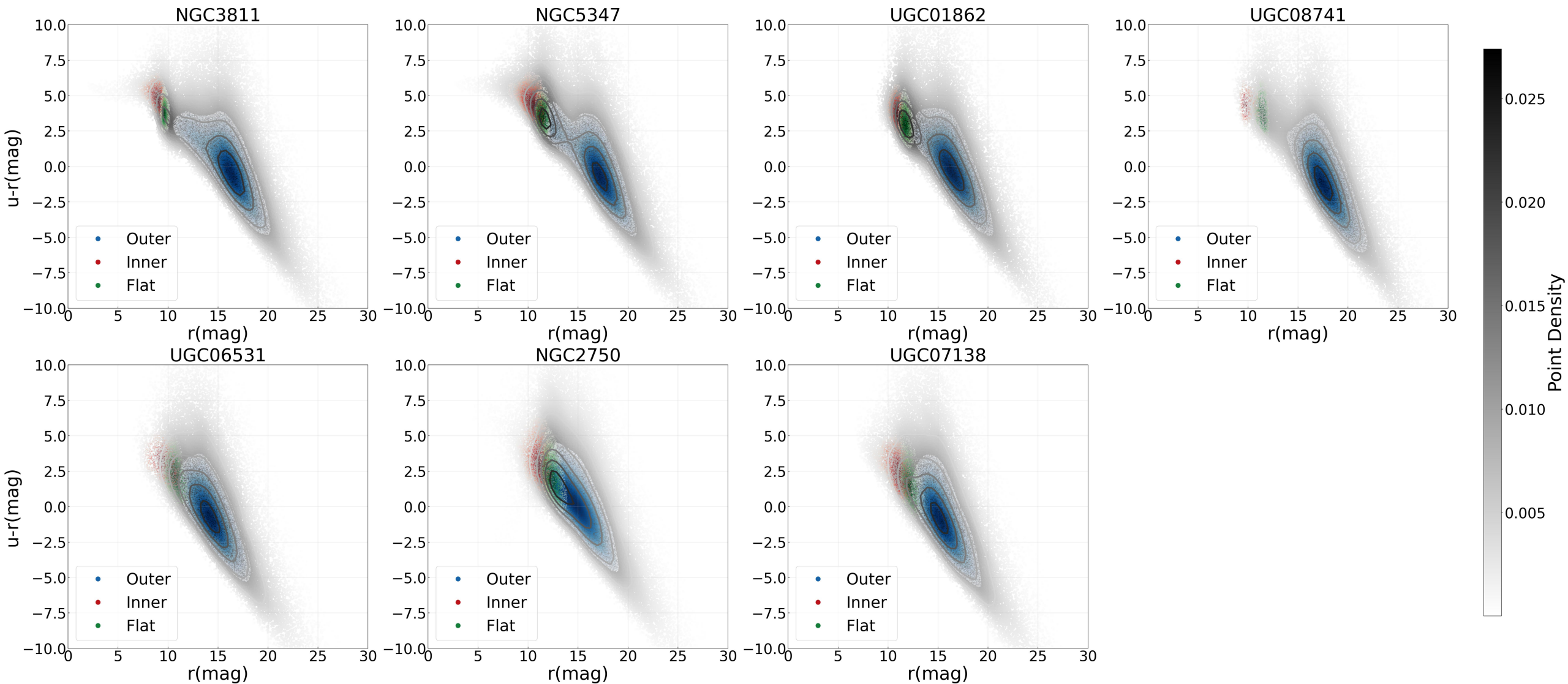
5.Bar's influence

simulation prove **bar** can change profile, if it's influence strong enough, maybe can create a **flat** region.

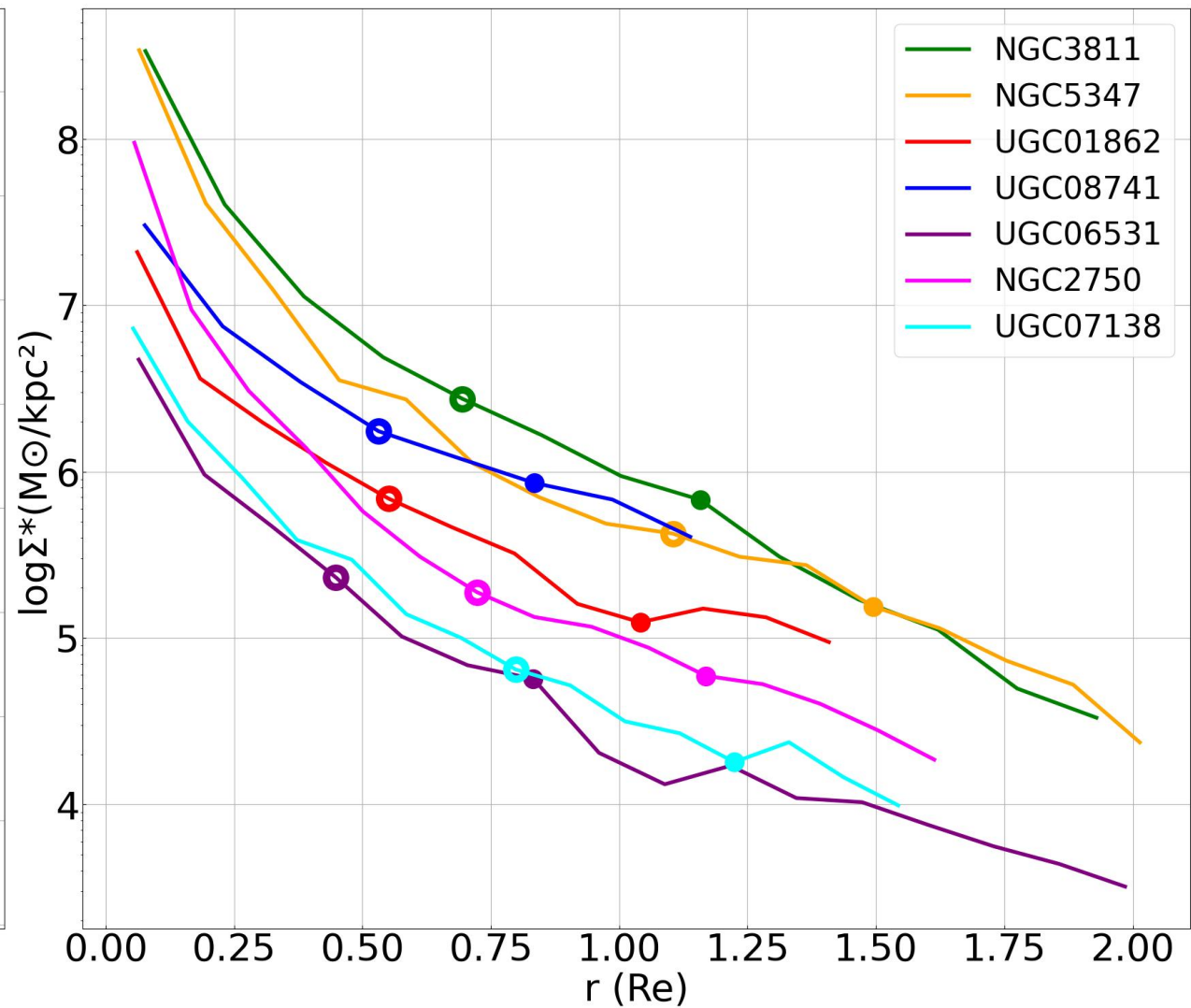
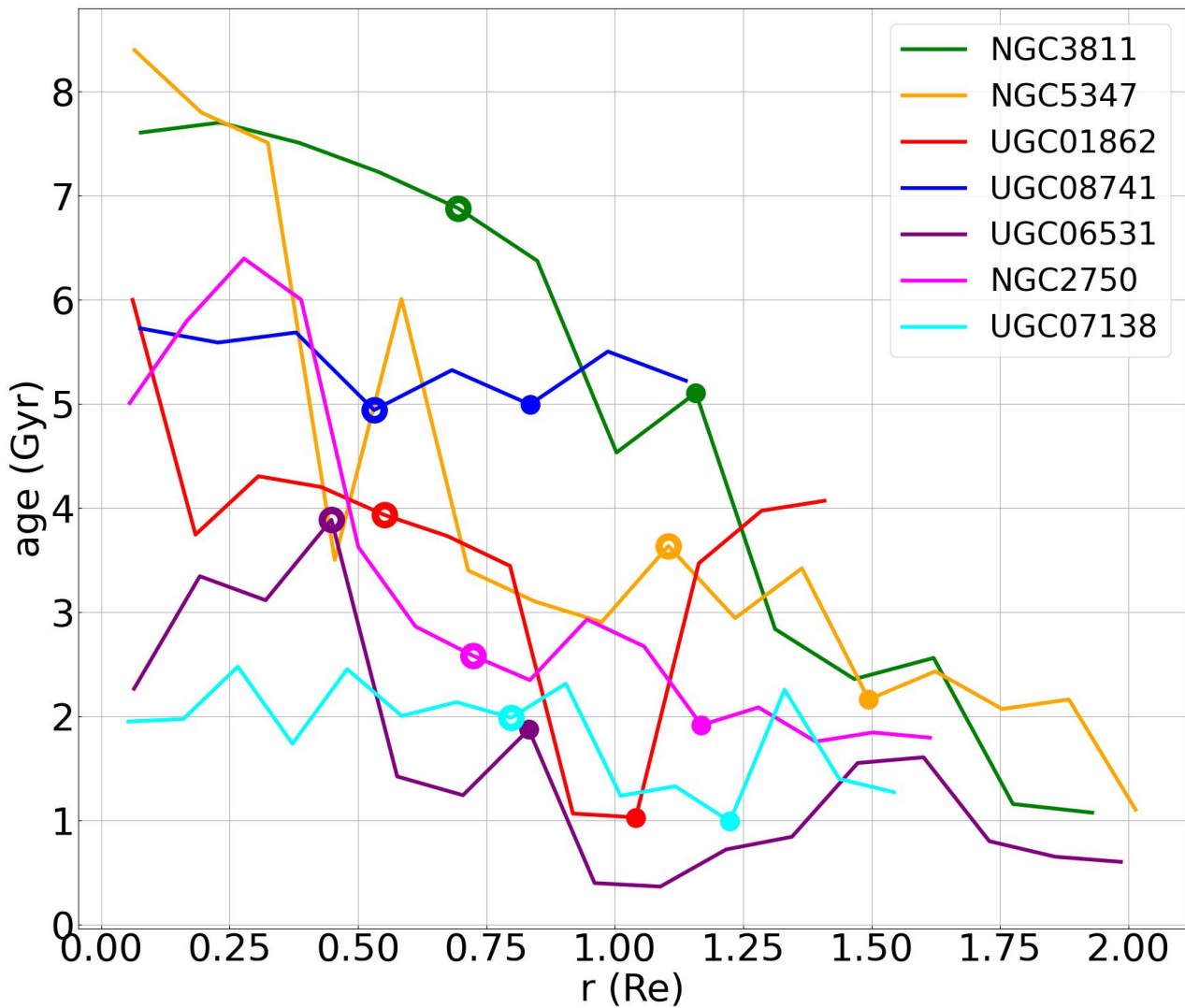


(Thor et al., 2021)

6.color-mag distribution



7.SED fitting



8.Summary

1. **Milky-Way** galaxy's radial structure is special, **flat** in 4 to 8 kpc, **rare** in the nearby galaxies.
2. Some sample showed **obvious band correlation**, but **not all**.
3. Some sample's color profile change faster than their comparison galaxies, maybe **AGN** or **Starburst** made the **central area quenched**.
4. Other sample which have **no obvious band correlation** maybe created the flat region by **bar**.
5. The generation mechanism maybe **multiple**.