

Stellar content imprints on the disc from the building-up of the outer parts



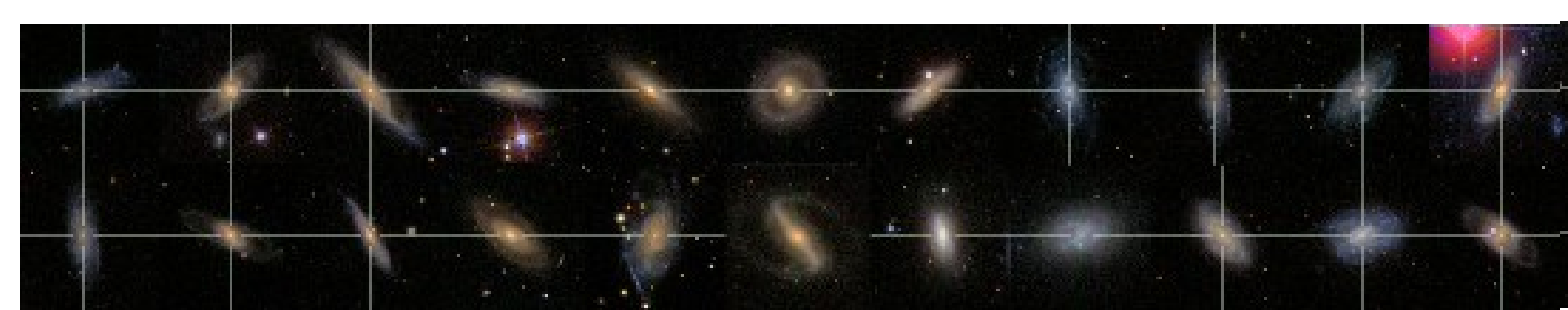
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HYPOTHESIS :

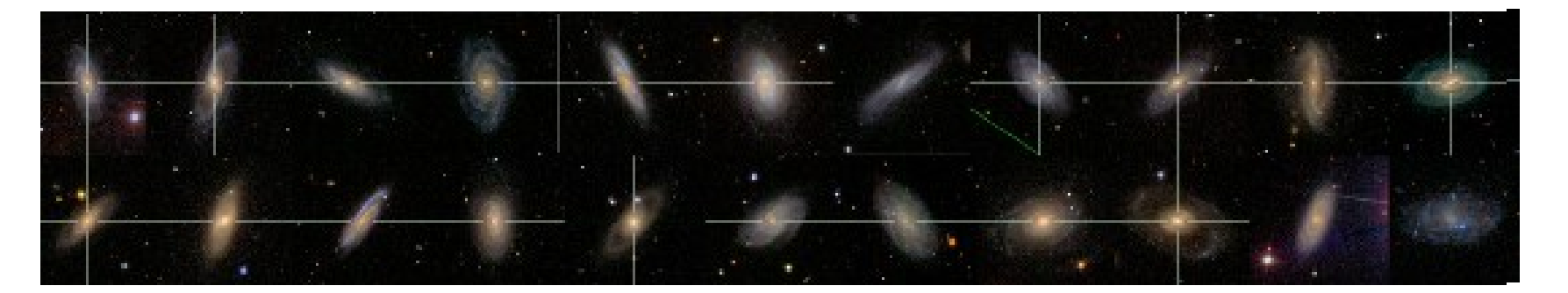
The outer disc profiles are expected to be populated, at least partially, by stars coming from the inner parts via radial migration. Different migration efficiencies might be the cause of the presence of different surface brightness (SB) profiles in spiral galaxies, i.e. Type I, II, and III. This effect should leave an imprint in the stellar population distribution of the inner disc.

To test this hypothesis, we have analysed the light (from SDSS data) and the stellar content radial distributions of 72 galaxies from the CALIFA sample covering the three different SB profiles.

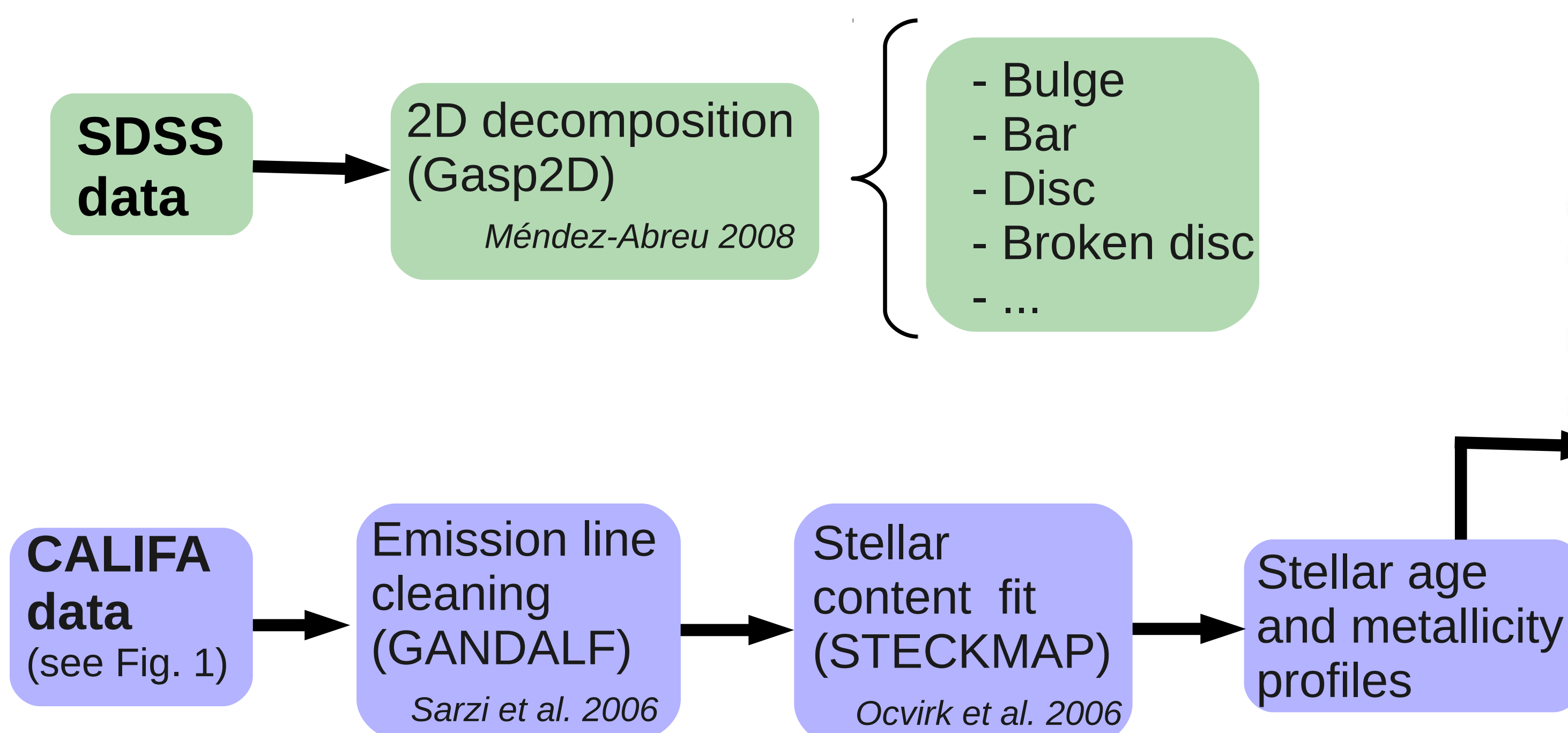


SAMPLE

72 small galaxies (to reach the outer parts) from the CALIFA mother sample



METHOD



STELLAR POPULATION GRADIENTS: An example

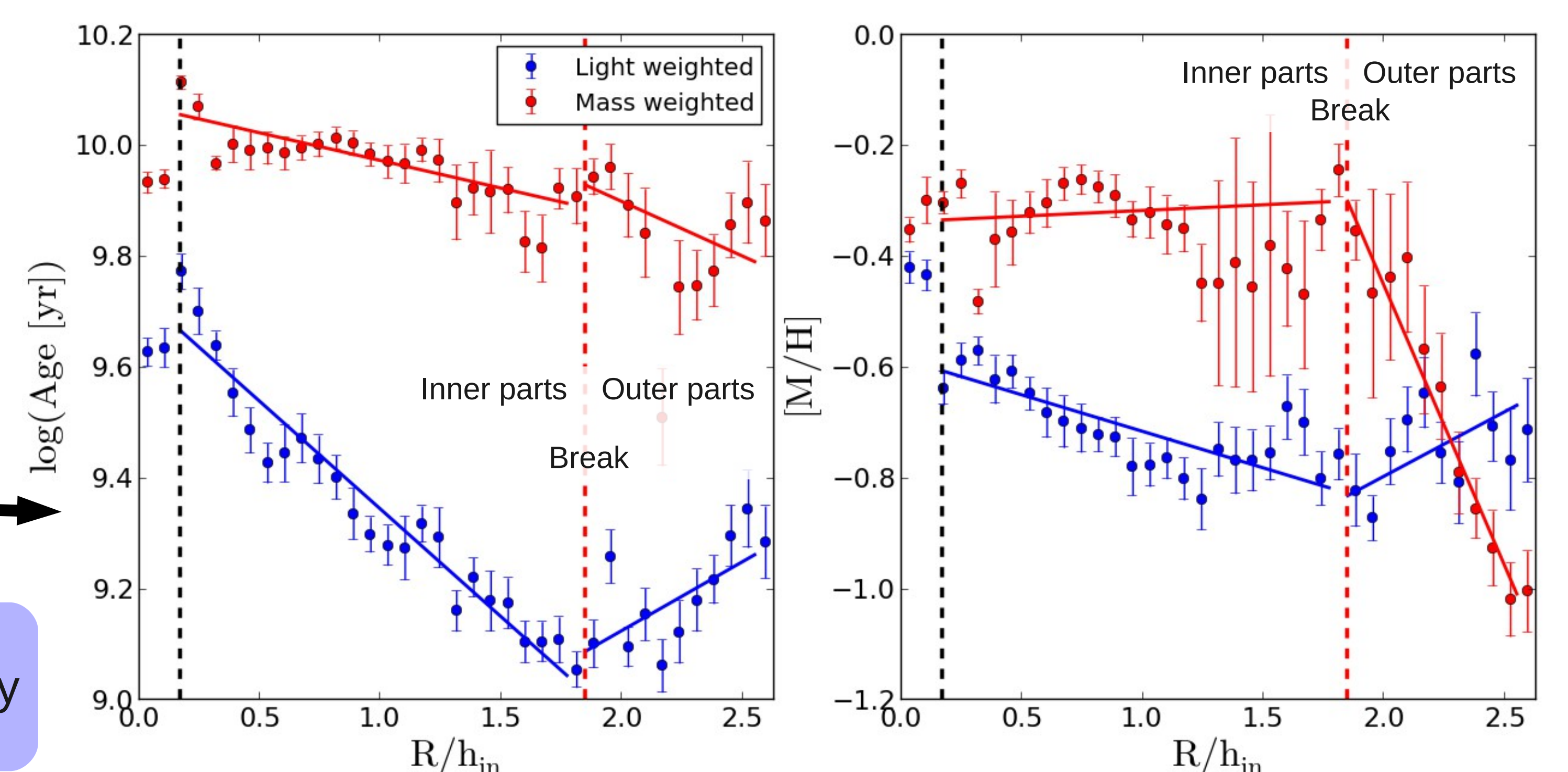


Figure 1: Age (left) and metallicity (right) profiles for NGC4711. Vertical lines mark the start of the disc-dominated region (black) and the position of the break (red)

RESULTS: Study of the inner gradients for type I, II, and III galaxies.

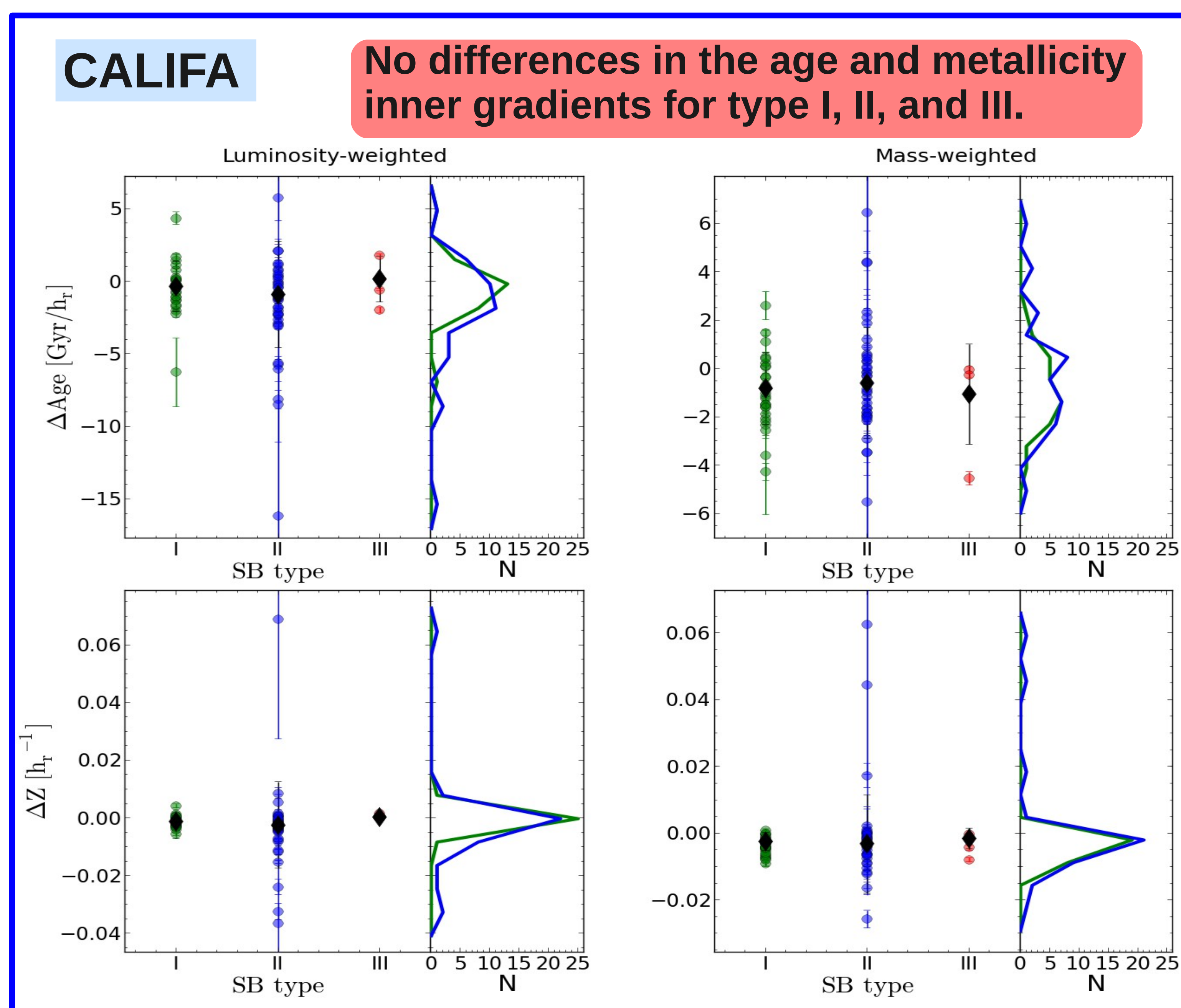


Figure 2: Inner age and metallicity gradients (light- and mass-weighted) from the CALIFA data.

However: Inner colour gradients

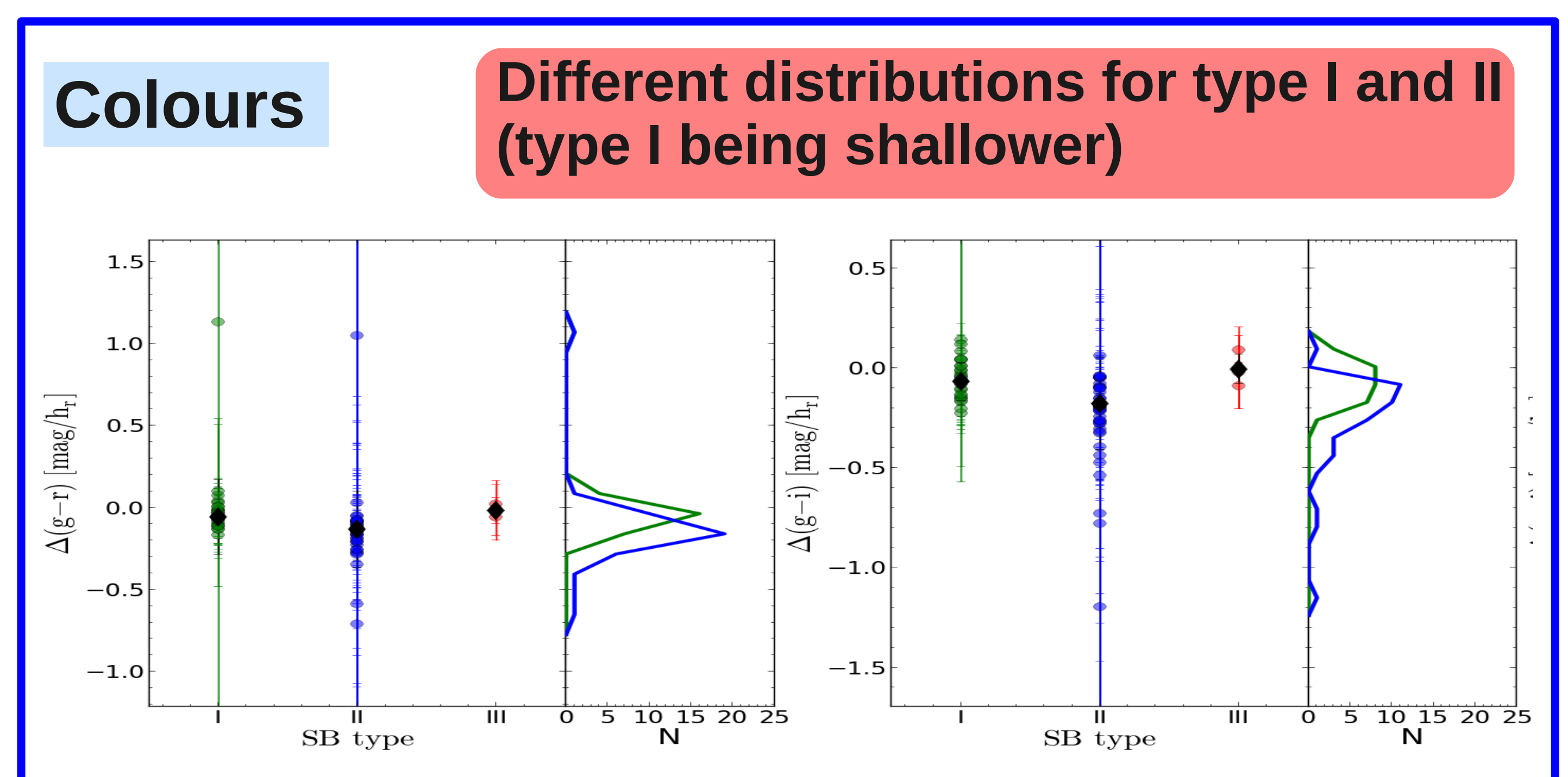


Figure 3: Inner colour gradients from the SDSS data.

Conclusions

From the analysis of the populations, differences in the amount of radial migration are ruled out as the main cause for the different SB profiles.

Other mechanisms must be responsible for the different observed SB profiles, e.g. star formation (threshold, multicomponent SF, warps, etc.) or satellite accretion.

The hinted differences in the colours need to be further investigated.