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No direct coupling between bending of galaxy disc stellar age and light profiles as seen from CALIFA

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Recent theoretical and observational works claim the existence of galaxies with a characteristic age profile consisting on a negative radial trend followed by a smooth age upturn in its outskirts (“U-shape”). This shape has been generally related to down-bending light distributions; however, the existence of a real link between observed Surface Brightness (SB) profiles and changes in stellar properties such as age is still unclear.

We select a sample of 68 spiral galaxies from the CALIFA survey (Sánchez *et al.* 2012) for which we analyse their 2D light distribution (aplying GASP2D to the SDSS data) and their stellar content from the IFS CALIFA data up to their outer parts using full-spectrum fitting codes (i.e. pPXF, GANDALF, and STECKMAP). We compare the age profile (light and mass-weighted) with the SB distribution for each galaxy in order to highlight differences between profile types (type I, exponential profile; and II, down-bending profile). From this comparison we should highlight three main points:

- We observe “U-shape” light-weighted age profiles in 29 out of the 68 galaxies under analysis. This finding implies that this feature seems to be a common one.
- This age upturn disappears in all cases when mass-weighting the age, suggesting the presence of an extended, old population of stars along the entire disc and highlighting the importance of recent star formation in the building-up of the U-shape.
- These profiles appear indistinctly for type I (11) and II (18) galaxies. Breaks are not necessarily linked to changes in the stellar population age.

Given recent results on the outer parts of nearby systems and the results presented in this proceeding, one of the most plausible explanations for the age upturn is the combination of an early formation of the entire disc (~ 10 Gyr ago), an inside-out growth of the disc that has not reached the outermost regions yet (reason of the age upturn), and an inside-out quenching of the star formation (partly responsible of the inner age decline).

All these results have been already published in Ruiz-Lara *et al.* 2016. We strongly encourage the reader to check such paper to expand the information given here.

References

Sánchez, S. F., *et al.* 2012, *A&A*, 538, A8

Ruiz-Lara, T., Pérez, I., Florido, E., Sánchez-Blázquez, P., *et al.* 2016, *MNRAS*, 456L, 35