# Stellar discs in massive galaxies

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Summary. Excluding those unsettled systems undergoing mergers, bright galaxies come
in two flavours: with and without discs. In this work we look for photometric evidence for
presence of discs and compare it with kinematic results of the ATLAS[3D] survey (Cappellari *et al.* 2011). We fit a Sérsic (1968) function to azimuthally averaged light profiles of
ATLAS[3D] galaxies to derive single component fits and, subsequently, we fit a combination
of the Sérsic function (free index n) and an exponential function ($n=1$) with the purpose
of decomposing the light profiles into "bulge" and "disc" components (B+D model) of all
non-barred sample galaxies. We compare the residuals of the B+D models with those of
the single Sérsic fits and select the B+D model as preferred only when the improvement is
substantial and there are no correlations within residuals. We find that the high angular
momentum objects (fast rotators) are disc dominated systems with bulges of typically
low n (when their light profiles can be decomposed) or are best represented with a single
Sérsic function with a low Sérsic index ($n < 3$). Single component systems with large
Sérsic indices are characteristic of low angular momentum objects (slow rotators).
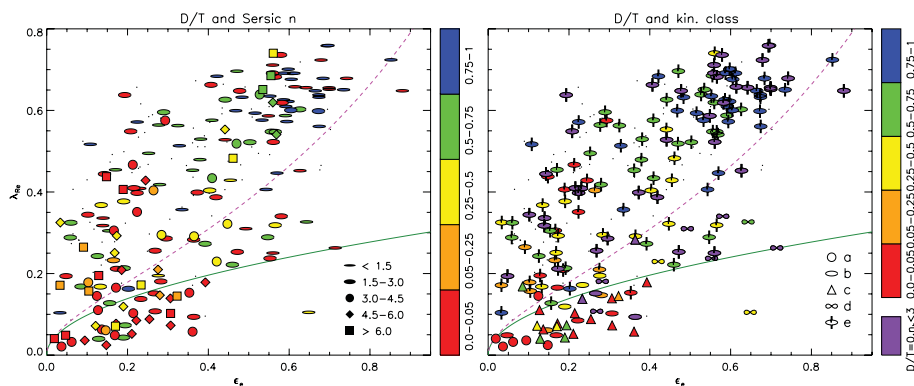
Figure 1. Angular momentum λ_R versus ellipticity ϵ of ATLAS[3D] galaxies. *Left:* Symbols
represent Sérsic indices as shown on the legend. *Right:* Symbols show different types of kinematics
from Krajnović *et al.* (2011) and are described in the legend: *a* - non rotating galaxies, *b* -
featureless non-regular rotators, *c* - KDC, *d* - counter-rotating discs, and *e* - regular rotators.
On both plots colours quantify D/T ratios, as shown on the respective colour bars.

References

Cappellari, M., *et al.* 2011,*MNRAS*,413,813
Sérsic, J. L.,1968, Atlas de galaxias australes, Observatorio Astrónomico, Córdoba, Argentina