

The stellar structure of early-type galaxies: a wide-field Mitchell Spectrograph view

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Much progress has been made in recent years towards understanding how early-type galaxies (ETGs) form and evolve. SAURON (Bacon *et al.* 2001) integral-field spectroscopy from the ATLAS3D survey (Cappellari *et al.* 2011) has suggested that less massive ETGs are linked directly to spirals, whereas the most massive objects appear to form from a series of merging and accretion events (Cappellari *et al.* 2013). However, the ATLAS3D data typically only extends to about one half-light radius (or effective radius, R_e), making it unclear if this picture is truly complete.

We observed twelve nearby ETGs using the Mitchell Spectrograph (Hill *et al.* 2008). We extracted stellar kinematics out to the fourth Gauss-Hermite moment, reaching $3R_e$ in most cases. We found no abrupt transitions in the ETG's λ_R (Emsellem *et al.* 2007) profiles beyond $1R_e$, consistent with our ETGs having mostly passive recent histories.

We used triaxial (van den Bosch *et al.* 2008) Schwarzschild (1979) modelling to investigate one galaxy - NGC 3998 - in more detail (Boardman *et al.* 2016). We find NGC 3998 to be near-oblate, with an axis ratio $q < 0.49$ at $1R_e$. We obtain an I-band M/L of $4.7_{-0.45}^{+0.32}$, in good agreement with independent stellar population modelling results (Cappellari *et al.* 2013). Our models prefer low dark matter fractions, with a fraction of $(7.1_{-7.1}^{+8.1})\%$ within $1R_e$. Our best-fit model contains few non-rotating orbits beyond $1R_e$, from which we infer that late-time accretion was not significant for this galaxy.

References

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