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Star Formation in Nearby Early-Type Galaxies: Mapping in UV, Optical, and CO

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Abstract. The SAURON integral-field survey reveals that small ($\sim 0.1\,R_{\rm e}$) kinematically decoupled cores (KDCs) in early-type galaxies are increasingly young toward the center and are typically found in fast-rotating galaxies, while large KDCs ($\sim 0.5\,R_{\rm e}$) have homogeneously old stars and are present in non-rotating galaxies (McDermid *et al.* 2006). *GALEX* UV imaging further allows the direct identification of regions of recent star formation ($\leqslant 0.5$ Gyr). In NGC 2974 for example, young stars are identified in the center and an outer ring (Jeong *et al.* 2006). Nuclear and inner ionised-gas rings (Sarzi *et al.* 2006) then suggest that current star formation is bar-driven. The CO detection rate of SAURON early-type galaxies is $\approx 40\%$ (Combes et al, in prep.). Synthesis imaging reveals that it is generally contained in a well-ordered central disk, both in galaxies with a (young) central stellar disk (e.g. NGC 4459, NGC 4526) or a (young) KDC (e.g. NGC 3032, NGC 4150) (Young et al, in prep.). CO also traces well the young stellar populations and ionised gas distribution and kinematics, but in KDCs not always the stellar kinematics (see Emsellem *et al.* 2004; Sarzi *et al.* 2006; Kuntschner *et al.* 2006).

Keywords. galaxies: elliptical and lenticular, cD, galaxies: formation, galaxies: evolution, galaxies: kinematics and dynamics, galaxies: stellar content, galaxies: individual (NGC 2974, NGC 3032, NGC 4150, NGC 4459, NGC 4526)

References

Emsellem, E., *et al.* 2004, *MNRAS* 352, 721
Jeong, H., Bureau, M., Yi, S.K., Krajnović, D., Davies, R.L. 2006, *MNRAS* submitted.
Kuntschner, H., *et al.* 2006, *MNRAS* 369, 497
McDermid, R.M., *et al.* 2006, *MNRAS* submitted.
Sarzi, M., *et al.* 2006, *MNRAS* 366, 1151