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Study of galaxy stellar halos and faint structures with VEGAS@VST

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Deep and large-scale multi-band imaging is crucial to study the galaxy outskirts, out to hundreds of kiloparsecs, where the imprints of the mass assembly reside: these are the regions of the stellar halos.

The stellar halos are extended and diffuse component with an optical surface brightness below $26\text{-}27\text{ mag/arcsec}^2$, in the g band. They can be made of multiple stellar components, can have complex kinematics and host substructures, in the form of shells and tidal tails, which indicate gravitational interactions in the formation history of a galaxy. The relics of the interactions are also very faint, and their detection requires very deep imaging.

In the recent years, a big effort was made to develop deep photometric surveys aimed at studying galaxy structures out to the regions of the stellar halos. In the framework of the VEGAS survey, taking advantage of the deep photometry, we aim at constructing a comprehensive database with which the predictions can be compared. In particular we want to check for the presence and extent of the stars formed in situ with respect to total accreted component (e.g. Cooper et al. 2015), in order to address the build up history of the stellar halos in ETGs.

We present a detailed study of the surface photometry of some ETGs in the VEGAS sample, to constrain their formation history, and to investigate the presence of very faint substructures in its surroundings.

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