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Tracing the evolution within nearby galaxy groups: a multi-wavelength approach

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Abstract. Evolutionary scenarios suggest that several mechanisms (from inner secular evolution to accretion/merging) may transform galaxy members, driving groups from an active star forming phase to a more passive, typical of dense environments. We are investigating this transition in a nearby group sample, designed to cover a wide range of properties (see also Marino *et al.* (2010), Bettoni *et al.* (2011) and Marino *et al.* (2012)). We study two groups, USGC U268 and USGC U376 located in different regions of the Leo cloud, through a photometric and kinematic characterization of their member galaxies. We revisit the group membership, using results from recent red-shift surveys, and we investigate their substructures. U268, composed of 10 catalogued members and 11 new added members, has a small fraction ($\sim 24\%$) of early-type galaxies (ETGs). U376 has 16 plus 8 new added members, with $\sim 38\%$ of ETGs. We find the significant substructuring in both groups suggesting that they are likely accreting galaxies. U268 is located in a more loose environment than U376. For each member galaxy, broad band integrated and surface photometry have been obtained in far-UV (FUV) and near-UV (NUV) with GALEX, and in u, g, r, i, z (SDSS) bands. H_α imaging and 2D high resolution kinematical data have been obtained using PUMA Scanning Fabry-Perot interferometer at the 2.12 m telescope in San Pedro Mártir (Baja California, México). We improved the galaxy classification and we detected morphological and kinematical distortions that may be connected to either on-going and/or past interaction/accretion events or environmental induced secular evolution. U268 appears more active than U376, with a large fraction of galaxies showing interaction signatures (60% vs. 13%). The presence of bars among late-type galaxies is $\sim 10\%$ in U268 and 29% in U376. The cumulative distribution of (FUV - NUV) colors of galaxies in U268 is significantly different (bluer) than that of U376's galaxies. Most (80%) of the early-type members in U376 inhabits the red sequence, a large fraction of galaxies, of different morphological types, are located in the green valley, while the blue sequence is under-populated with respect to U268.

Keywords. galaxies: evolution, galaxies: groups, galaxies: photometry, ultraviolet: galaxies

References

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