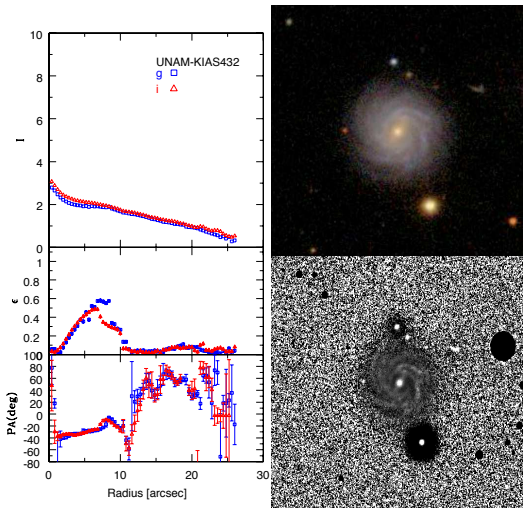

Fig. 1. UNAM-KIAS432. Left: Surface brightness, ellipticity (ϵ) and PA radial profiles after an isophotal analysis to the g and i images. Right: RGB color map image from SDSS and a 4.2 × 4.2 arcmin r-band filtered-enhanced image.

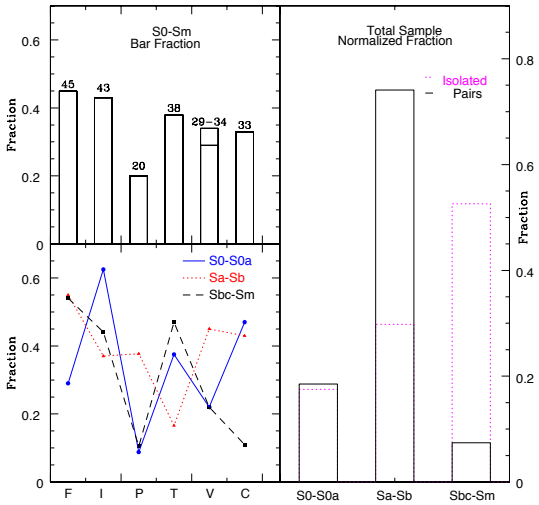

Fig. 2. Left: Total bar fraction (upper side) and morphological bar fraction (lower side) for S0-S0a (blue solid line), Sa-Sb (red dotted line) and (Sbc-Sm black dashed line) morphological types (lower side) for different environments: field (F), isolated (I), pairs (P), triplets (T), Virgo Cluster (V) and Coma Cluster (C). Right: Normalized Bar Fraction of isolated (magenta dotted line) and pair (black solid line) samples.

biased against the presence of major mergers, with a wide range of separations and morphological features, associated with tidal interactions

Historically, bars have been identified by eye using a variety of (presumably subjective) criteria, analysing the shape and orientation of the galaxy isophotes (Wozniak et al. 1995), or by studying the Fourier modes of the light distribution, however the most widely adopted quantitative technique for identifying bars is the ellipse-fitting method, in which a bar must exhibit a characteristic signature in both the ellipticity and position angle profiles (Marinova & Jogee 2007).

This samples have been analysed by fitting ellipses to the isophotes in the $g, i,$, B, I bands as described in Wozniak et al. (1995); Jedrzejewski (1987). We considered that a galaxy hosts a bar when: (1) the ellipticity radial profile shows a significant increase followed by a significant decrease ($\Delta\epsilon \geq 0.08$), and (2) the PA of the fitted ellipses is roughly constant within the bar region (ΔPA $\leq 20°$) see Figure 1.

We have obtained a ≈43% bar fraction for isolated galaxies similar to that in other field galaxies (Gadotti 2010) but higher than the fraction found in Coma and Virgo clusters (Giordano et al. 2010; Marinova et al. 2010), see Figure 2. The bar fraction ≈20% found in pairs is the lowest value when compared against other environments (field Giordano et al. 2010; triplets Hernández-Toledo et al. 2011, and clusters Giordano et al. 2010; Marinova et al. 2010), see Figure 2. If our results are confirmed, bars are likely not triggered by galaxy interactions or maybe they are destroyed/weakened by them. The morphological dependence show a higher bar fraction ≈74% in early-type spirals (Sa-Sb) in pairs while isolated galaxies show their maximum bar fraction ≈52% for late-type spirals (Sbc-Sm) see Figure 2.

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