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Kinematic properties of early type galaxy halos using planetary nebulae

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We studied the kinematics of the halo of a sample of 16 early type galaxies out to 5-10 effective radii using Planetary Nebulae (PNe) as kinematic tracers (Coccato *et al.* 2009).

We show that PNe are reliable tracers for the mean stellar population distribution and kinematics. In fact we found: i) a good agreement between the PNe number density distribution and the stellar surface brightness in the region where the two data sets overlap; ii) a good agreement between PNe and absorption-line kinematics. Therefore, the combination of photometry, absorption-line and PNe kinematics can be used to derive the entire dynamical picture of the galaxy and its halo. This is useful for the derivation of the luminous and dark matter profiles (e.g. De Lorenzi *et al.* 2008; 2009; Napolitano *et al.* 2009).

Moreover, in our analysis we found i) that the mean rms velocity profiles fall into two groups, with part of the galaxies characterized by slowly decreasing profiles and the remainder having steeply falling profiles; ii) a larger variety of velocity dispersion radial profiles; iii) that twists and misalignments in the velocity fields are more frequent at large radii, including some fast rotator galaxies; iv) that outer haloes are characterized by more complex radial profiles of the specific angular momentum-related λ_R parameter than observed within 1 R_e; v) that many objects are more rotationally dominated at large radii than in their central parts; and vi) that the halo kinematics are correlated with other galaxy properties, such as total B-band and X-ray luminosity, isophotal shape, total stellar mass, V/σ, and α parameter, with a clear separation between fast and slow rotators.

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