

Kinematics of the Outer Cluster System of NGC 1399

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We present preliminary results of our dynamical study of the outer globular cluster system of NGC 1399, the central galaxy in the Fornax cluster. Spectra of about 150 globular clusters (GCs) around NGC 1399 have been acquired at the VLT with FORS 2/MXU. Their projected radial distances lie in the range $4' < r < 18'$. At a distance of 19 Mpc, this corresponds to 20 - 100 kpc, the mean distance of the clusters in our new sample being 60 kpc. Colours in the Washington system are available for about 110 clusters. We find that the kinematical properties of the blue (metal-poor) and the red (metal-rich) GC subpopulations are quite different: For the red clusters whose velocity distribution is symmetric with respect to the systemic velocity of NGC 1399 (1440 km/s), we derive a line-of-sight velocity dispersion of about 290 km/s. Applying the velocity selection ($800 < v < 2080$ km/s) from the study of the inner GC system by Richtler et al. (AJ, 127:2094, 2003), we find a dispersion of 255 km/s. This value agrees very well with the one found for the inner 2' - 9' red clusters in the sample of Richtler et al., indicating the continuation of the constant circular velocity curve found for the inner region. The blue clusters, on the other hand, show an asymmetric velocity distribution. They peak at a distinctly higher velocity than the systemic velocity. A similar peak appeared already in the inner sample which suggests that our present sample is contaminated by a cluster population which is not or only weakly concentrated towards NGC 1399. This finding might lend support to the scenario modelled by Bekki et al. (MNRAS, 344:1334, 2003), in which the low number of GCs surrounding the neighbouring elliptical NGC 1404 (at a projected distance of about 45 kpc

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and a velocity of 1950 km/s) is explained by a past interaction with NGC 1399. NGC 1404 could have lost a substantial part of its GC system through tidal stripping as suggested by Kissler-Patig et al. (AJ, 117:1206, 1999). This obviously complicates the use of the blue clusters as dynamical tracers. However, selecting only the blue clusters with velocities below the systemic velocity of NGC 1399, omitting the extreme velocities and mirroring this distribution results in a dispersion of 300 km/s, again in agreement with the inner blue sample. At this early stage of the analysis, the present data therefore does not reveal any evidence for a change of the constant circular velocity curve out to 100 kpc.