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The Mass Distribution of the Great Attractor as Revealed by a Deep NIR Survey

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This paper presents the analysis of a deep near-infrared J,H,Ks-imaging survey (37.5 sq deg) aimed at tracing the galaxy distribution of the Great Attractor (GA) in the Zone of Avoidance along the so-called Norma Wall. The resulting galaxy catalog is complete to extinction-corrected magnitudes Ks^o = 14.8 mag for extinctions less than A_K = 1.0 mag and star densities below log N(Ks<14.0) < 4.72. Of the 4360 cataloged galaxies, 99.2% lie in the hereby constrained 89.5% of the survey area. Although the analyzed galaxy distribution reveals no new major galaxy clusters at the GA distance (albeit some more distant ones), the overall number counts and luminosity density indicate a clear and surprisingly smooth overdensity at the GA distance that extends over the whole surveyed region. A mass estimate of the Norma Wall overdensity derived from (a) galaxy number counts and (b) photometric redshift distribution gives a lower value compared to the original prediction by Lynden-Bell et al. 1988 (~14%), but is consistent with more recent independent assessments.

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