

Kinematic study of the Virgo cluster

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The work studies kinematic characteristics and distribution of galaxies with radial velocities $V_{LG} < 2600$ km/s in the region of 30 by 20 degrees centered on the radio galaxy M87. The sample contains 1537 galaxies; of them, 831 (54%) are concentrated within 6 degree zone corresponding to the virial radius of the cluster $R_{vir} = 1.7$ Mpc, and 738 galaxies (48%) have distance and peculiar velocity estimates. We identify the infall of galaxies towards the Virgo cluster core along the Virgo Southern Extension filament. From a 1D profile of the cluster we obtain the virial mass estimate of $(7.2 \pm 0.5) \times 10^{14}$ Msun in tight agreement with its mass estimate via external infall pattern of galaxies. We conclude that the Virgo cluster outskirts does not contain significant amount of dark matter beyond its virial radius.