

Nearby Groups of Galaxies in the Hercules–Bootes Constellations

I. D. Karachentsev^{1*}, O. G. Kashibadze¹, and V. E. Karachentseva²

¹*Special Astrophysical Observatory, Russian Academy of Sciences, Nizhnii Arkhyz, 369167 Russia*

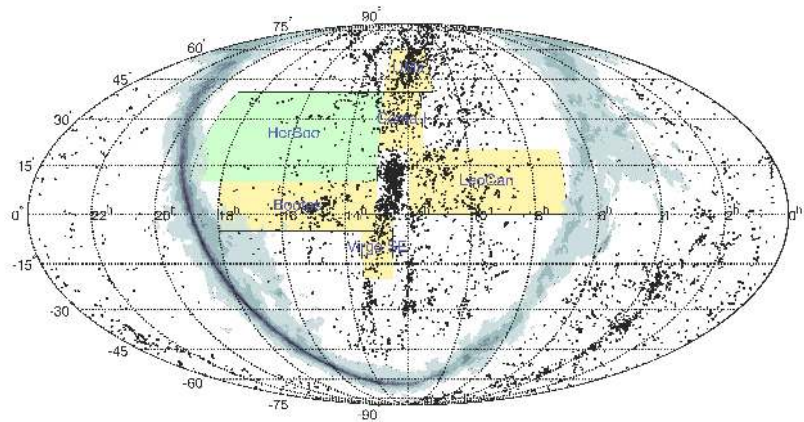
²*Main Astronomical Observatory of National Academy of Sciences of Ukraine, Kiev, 03143 Ukraine*

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Abstract—We consider a sample of 412 galaxies with radial velocities $V_{LG} < 2500 \text{ km s}^{-1}$ situated in the sky region of $RA = 13^{\text{h}}0-19^{\text{h}}0$, $Dec = +10^\circ \dots +40^\circ$ between the Local Void and the Supergalactic plane. One hundred and eighty-one of them have individual distance estimates. Peculiar velocities of the galaxies as a function of Supergalactic latitude SGB show signs of Virgocentric infall at $SGB < 10^\circ$ and motion from the Local Void at $SGB > 60^\circ$. A half of the Hercules–Bootes galaxies belong to 17 groups and 29 pairs, with the richest group around NGC 5353. A typical group is characterized by the velocity dispersion of 67 km s^{-1} , the harmonic radius of 182 kpc, the stellar mass of $4.3 \times 10^{10} M_\odot$ and the virial-to-stellar mass ratio of 32. The binary galaxies have the mean radial velocity difference of 37 km s^{-1} , the projected separation of 96 kpc, the mean integral stellar mass of $2.6 \times 10^9 M_\odot$ and the mean virial-to-stellar mass ratio of about 8. The total dark-matter-to-stellar mass ratio in the considered sky region amounts to 37 being almost the same as that in the Local Volume.

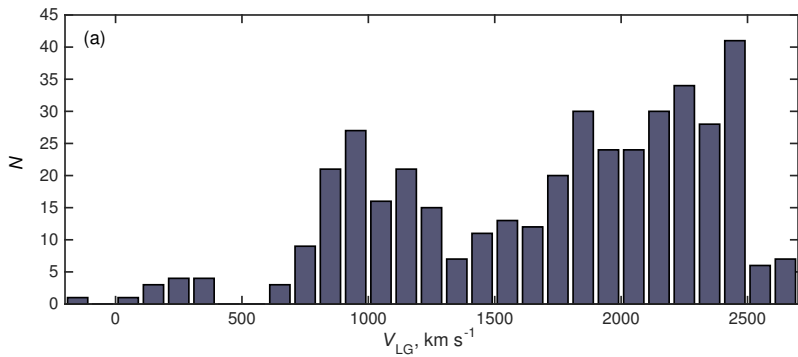
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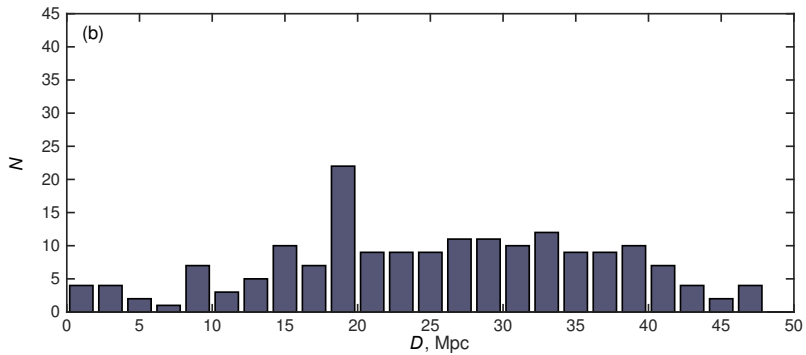
Key words: galaxies: kinematics and dynamics—galaxies: distances and redshifts—galaxies: groups

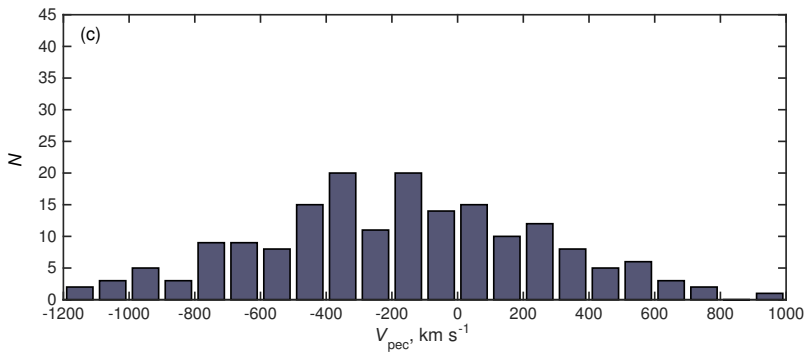


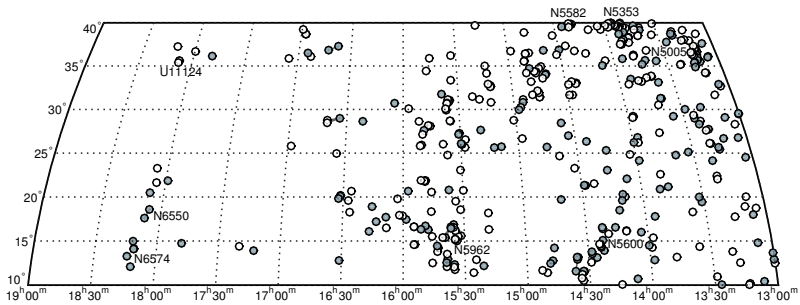
Список 412 галактик с лучевыми скоростями $V_{LG} \leq 2500$ км/с, находящихся в рассматриваемой области неба, доступен в электронном виде в базе данных Vizier:

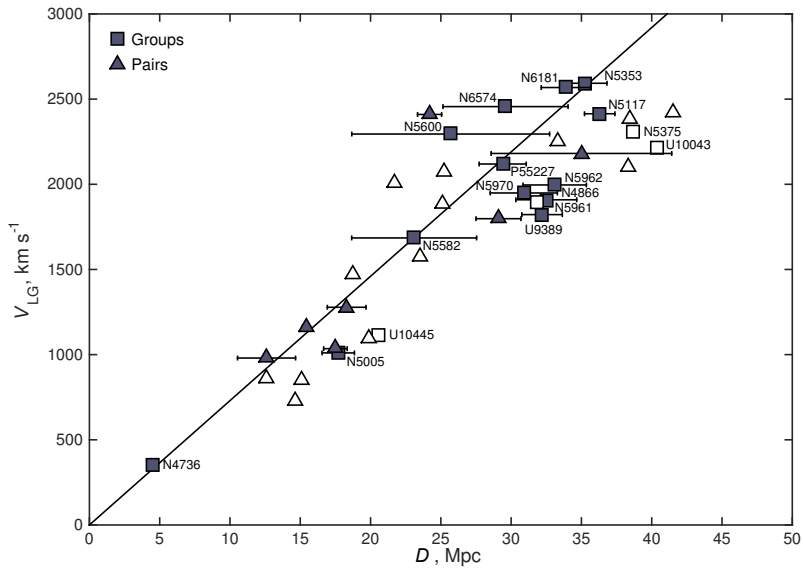
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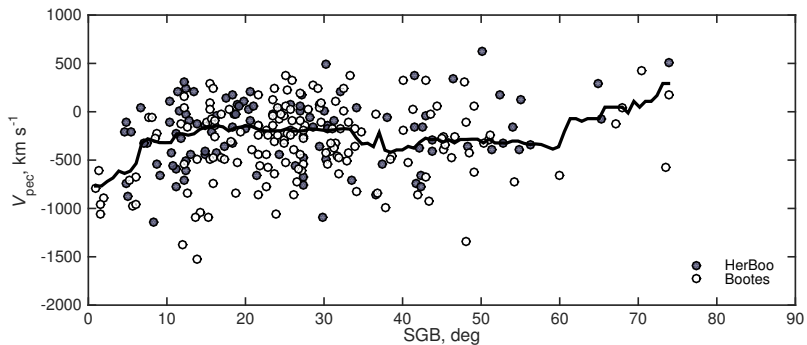


Table 4. Comparative properties of the three studied sky regions

Parameter	Leo–Cancer	Bootes strip	Hercules–Bootes
Sky area, sq.deg.	1477	1121	2447
V_{LG}^{\max} , km s ⁻¹	2000	2000	2500
Volume, Mpc ³	3084	2337	9975
N_V	543	361	412
N_D	290	161	181
Number density, Mpc ⁻³	0.176	0.154	0.042
$N(\text{groups}+\text{pairs})$	23+20	13+11	17+29
Fraction of isolated	0.51	0.44	0.50
$\sum M_{\text{sys}}^*$, $10^{12}M_{\odot}$	3.50	2.63	2.62
$\rho_{\text{sys}}^*/\langle\rho^*\rangle$	2.47	2.45	0.57
$\sum M_p$, $10^{13}M_{\odot}$	9.10	8.80	9.58
$\sum M_p/\sum M^*$	26	33	37