

New variable stars in Lacerta: area of $2^{\circ}.3 \times 2^{\circ}.3$, center $\alpha=22^{\text{h}}50^{\text{m}}$ $\delta=54^{\circ}00'$. Part III

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#	Name	Other	Coord (J2000)	Type	Max	Min	System	Period	Epoch (JD)	type	Sp	Comment	L.Curve	Find.Chart	Data
1		2MASS 22532408+5423289	22 53 24.088 +54 23 28.97	EA	15.03	15.3		0.509428:	2456934.137	min		Comm. 1	lc54533.png	ch54533.png	out54533.dat
2		2MASS 22532409+5324222	22 53 24.090 +53 24 22.21	EW	12.33	12.4		0.60083	2456927.281	min		Comm. 2	lc13629.png	ch13629.png	out13629.dat
3		2MASS 22532818+5334536	22 53 28.181 +53 34 53.64	LB	12.67	12.87				other		Comm. 3	lc17980.png	ch17980.png	out17980.dat
4		2MASS 22533548+5346092	22 53 35.490 +53 46 09.27	EW	16.3	17.0		0.46748	2456917.177	min		Comm. 4	lc22816.png	ch22816.png	out22816.dat
5		2MASS 22533678+5441190	22 53 36.788 +54 41 19.01	SR	12.44	12.71		96:		other		Comm. 5	lc46812.png	ch46812.png	out46812.dat
6		2MASS 22534821+5423484	22 53 48.220 +54 23 48.45	SR:	13.07	13.14		46.3	2456929.5	max		Comm. 6	lc54935.png	ch54935.png	out54935.dat
7		2MASS 22541998+5430327	22 54 19.980 +54 30 32.77	EB	14.59	14.98		0.58539	2456928.184	min		Comm. 7	lc52457.png	ch52457.png	out52457.dat
8		2MASS 22542352+5349027	22 54 23.526 +53 49 02.76	EA	15.6	16.01		1.89908:	2456892.323	min			lc23790.png	ch23790.png	out23790.dat
9		2MASS 22542544+5336021	22 54 25.442 +53 36 02.14	EB	14.46	14.63		0.56104	2456892.299	min		Comm. 9	lc18401.png	ch18401.png	out18401.dat
10		2MASS 22542579+5416414	22 54 25.791 +54 16 41.43	EA	14.68	14.98		0.85572	2456928.286	min		Comm. 10	lc39926.png	ch39926.png	out39926.dat
11		2MASS 22542644+5421034	22 54 26.441 +54 21 03.50	EW	15.66	15.83		0.53399	2456928.371	min		Comm. 11	lc44669.png	ch44669.png	out44669.dat
12		2MASS 22543337+5417584	22 54 33.379 +54 17 58.50	EW	14.37	14.61		0.37325	2456928.235	min		Comm. 12	lc39105.png	ch39105.png	out39105.dat
13		2MASS 22544133+5329122	22 54 41.331 +53 29 12.24	EA	12.49	13.2		1.30335	2456928.239	min		Comm. 13	lc15236.png	ch15236.png	out15236.dat
14		2MASS 22544408+5337353	22 54 44.086 +53 37 35.36	EA	16.2	16.8		1.3475:	2456928.301	min		Comm. 14	lc19173.png	ch19173.png	out19173.dat
15		2MASS 22544638+5427196	22 54 46.381 +54 27 19.61	BY:	13.004	13.041		0.6278	2456928.267	min		Comm. 15	lc53459.png	ch53459.png	out53459.dat
16		2MASS 22545028+5414168	22 54 50.288 +54 14 16.83	EA	15.19	15.75		1.6098	2456918.153	min		Comm. 16	lc40845.png	ch40845.png	out40845.dat
17		2MASS 22545244+5304362	22 54 52.446 +53 04 36.25	SR:	12.89	13.04		59.60:	2456201.268	max		Comm. 17	lc05372.png	ch05372.png	out05372.dat
18		2MASS 22545361+5340179	22 54 53.618 +53 40 17.99	BY:	12.87	12.89		0.4434	2456894.339	max		Comm. 18	lc20068.png	ch20068.png	out20068.dat
19		2MASS 22545464+5428044	22 54 54.646 +54 28 04.41	CEP:	13.15	13.27		2.1934:	2456928.351	max			lc53075.png	ch53075.png	out53075.dat

20		2MASS 22551126+5400176	22 55 11.266 +54 00 17.62	LB	12.81	13.01				other		Comm. 20	lc28206.png	ch28206.png	out28206.dat
21		2MASS 22551430+5312512	22 55 14.304 +53 12 51.21	EW	12.82	12.95		0.597248	2456929.138	min		Comm. 21	lc08520.png	ch08520.png	out08520.dat
22		2MASS 22551533+5322539	22 55 15.331 +53 22 53.97	EA	15.37	16.43		1.17671	2456929.159	min		Comm. 22	lc12868.png	ch12868.png	out12868.dat
23		2MASS 22551856+5413496	22 55 18.564 +54 13 49.67	DSCT	12.545	12.561		0.0844756	2456917.255	max			lc41125.png	ch41125.png	out41125.dat
24		2MASS 22552642+5403542	22 55 26.425 +54 03 54.27	EB	14.65	15.03		0.76863	2456917.123	min		Comm. 24	lc29859.png	ch29859.png	out29859.dat
25		2MASS 22552898+5400596	22 55 28.982 +54 00 59.64	EW	13.86	13.95		0.278628	2456928.225	min		Comm. 25	lc28532.png	ch28532.png	out28532.dat
26		2MASS 22553041+5322029	22 55 30.416 +53 22 02.91	EW	15.31	15.68		0.39123	2456928.067	min		Comm. 26	lc12364.png	ch12364.png	out12364.dat
27		2MASS 22553084+5437189	22 55 30.843 +54 37 18.97	LB	12.62	13.44				other		Comm. 27	lc49447.png	ch49447.png	out49447.dat
28		2MASS 22553162+5344346	22 55 31.627 +53 44 34.63	BY	12.86	12.9		1.4243:	2456927.193	max			lc21553.png	ch21553.png	out21553.dat
29		2MASS 22554011+5424335	22 55 40.119 +54 24 33.53	LB	13.58	13.95				other		Comm. 29	lc47153.png	ch47153.png	out47153.dat
30		2MASS 22554204+5410475	22 55 42.042 +54 10 47.58	EA	16.16	16.9		2.4678	2456927.282	min		Comm. 30	lc42331.png	ch42331.png	out42331.dat
31		2MASS 22555437+5459127	22 55 54.375 +54 59 12.75	EA	13.62	14.01		2.57461	2456894.304	min		Comm. 31	lc36753.png	ch36753.png	out36753.dat
32		2MASS 22555603+5341393	22 55 56.034 +53 41 39.36	EA	14.82	15.32		0.79954	2456927.219	min		Comm. 32	lc20581.png	ch20581.png	out20581.dat
33		2MASS 22555732+5406531	22 55 57.321 +54 06 53.18	EA	15.48	15.7		1.7663	2456927.241	min		Comm. 33	lc31040.png	ch31040.png	out31040.dat
34		2MASS 22555929+5435258	22 55 59.298 +54 35 25.81	EA	14.24	14.5		2.6315	2456918.073	min		Comm. 34	lc50543.png	ch50543.png	out50543.dat
35		2MASS 22560506+5308282	22 56 05.070 +53 08 28.22	EA	12.12	12.22		6.55:	2456928.139	min			lc06684.png	ch06684.png	out06684.dat
36		2MASS 22560613+5313389	22 56 06.131 +53 13 38.91	EW	16.24	16.9:		0.6653	2456906.765	min		Comm. 36	lc08977.png	ch08977.png	out08977.dat
37		2MASS 22563076+5256094	22 56 30.760 +52 56 09.44	EA	15.31	15.81		1.5789:	2456892.196	min		Comm. 37	lc01931.png	ch01931.png	out01931.dat
38		2MASS 22563547+5334378	22 56 35.475 +53 34 37.86	EW	15.7	15.95		0.67926	2456918.512	min		Comm. 38	lc17564.png	ch17564.png	out17564.dat
39	GZ Lac	2MASS 22563921+5348264	22 56 39.219 +53 48 26.47	EA	15.22	16.59		1.8392	2456917.307	min		Comm. 39	lc23049.png	ch23049.png	out23049.dat
40		2MASS 22564126+5423467	22 56 41.266 +54 23 46.71	EA	14.75	15.19		1.31587	2456927.199	min		Comm. 40	lc55278.png	ch55278.png	out55278.dat
41	HI Lac	2MASS 22564866+5347476	22 56 48.665 +53 47 47.67	EA	14.73	<16.7		1.04243	2456892.323	min		Comm. 41	lc22929.png	ch22929.png	out22929.dat
42		2MASS 22565543+5426470	22 56 55.436 +54 26 47.04	HADS	15.59	15.76		0.048344	2456927.217	max			lc53116.png	ch53116.png	out53116.dat
43		2MASS 22565839+5356393	22 56 58.398 +53 56 39.38	BY	14.47	14.55		4.2734:	2456227.316	min			lc26640.png	ch26640.png	out26640.dat
44		2MASS 22570008+5349082	22 57 00.084 +53 49 08.29	DSCT	13.92	13.98		0.12813	2456928.159	max			lc23412.png	ch23412.png	out23412.dat
45		2MASS 22570086+5449295	22 57 00.866 +54 49 29.51	DSCT	12.68	12.71		0.1587278	2456934.197	max			lc38572.png	ch38572.png	out38572.dat
46		2MASS 22571126+5353287	22 57 11.264 +53 53 28.76	BY:	13.31	13.46		0.51897	2456928.284	max		Comm. 46	lc25151.png	ch25151.png	out25151.dat
47		2MASS 22571252+5421509	22 57 12.530 +54 21 50.97	EW	15.32	15.55		0.40252	2456892.402	min		Comm. 47	lc45181.png	ch45181.png	out45181.dat
48		2MASS 22571868+5413015	22 57 18.684 +54 13 01.55	EW	14.54	15.23		0.33864	2456928.163	min		Comm. 48	lc41328.png	ch41328.png	out41328.dat
49		2MASS 22574040+5329269	22 57 40.410 +53 29 27.00	HADS	15.28	15.39		0.150905	2456892.176	max			lc15128.png	ch15128.png	out15128.dat

Comments:

1. $\text{Min}_{\text{II}} = 15^{\text{m}}.05$. $D = 0.1$ P.

2. $\text{Min}_{\text{II}} = 12^{\text{m}}.37$.

3. $J = 8^m.425$, $H = 7^m.401$, $K = 7^m.055$ (2MASS). NSVS catalog entry: [Object ID 3472469](#).
4. $\text{Min}_{\text{II}} = 16^m.7$.
5. $J = 8^m.328$, $H = 7^m.257$, $K = 6^m.849$ (2MASS). NSVS catalog entry: [Object ID 3471820](#).
6. $J = 9^m.743$, $H = 8^m.733$, $K = 8^m.433$ (2MASS).
7. $\text{Min}_{\text{II}} = 14^m.82$. O'Connell effect.
9. $\text{Min}_{\text{II}} = 14^m.55$.
10. $\text{Min}_{\text{II}} = 14^m.8$. $D = 0.16$ P.
11. $\text{Min}_{\text{II}} = 15^m.75$.
12. $\text{Min}_{\text{II}} = 14^m.61$.
13. $\text{Min}_{\text{II}} = 13^m.14$. $D = 0.12$ P.
14. $\text{Min}_{\text{II}} = 16^m.8$.
15. $J = 11^m.655$, $H = 11^m.341$, $K = 11^m.258$ (2MASS).
16. $\text{Min}_{\text{II}} = 15^m.55$. $D = 0.18$ P.
17. $J = 10^m.889$, $H = 10^m.256$, $K = 10^m.108$ (2MASS).
18. $J = 11^m.772$, $H = 11^m.502$, $K = 11^m.438$ (2MASS).
20. $J = 8^m.587$, $H = 8^m.588$, $K = 7^m.125$ (2MASS). NSVS catalog entry: [Object ID 3473769](#).
21. $\text{Min}_{\text{II}} = 12^m.92$. O'Connell effect.
22. $\text{Min}_{\text{II}} = 15^m.46$. $D = 0.16$ P.
24. $\text{Min}_{\text{II}} = 14^m.80$.
25. $\text{Min}_{\text{II}} = 13^m.94$.
26. $\text{Min}_{\text{II}} = 15^m.63$.
27. $J = 9^m.232$, $H = 8^m.059$, $K = 7^m.667$ (2MASS).
29. $J = 9^m.671$, $H = 5^m.549$, $K = 8^m.167$ (2MASS).
30. Twice shorter period (1.2339 d) is possible.

31. $D = 0.16$: P. Twice longer period is possible.

32. $\text{Min}_\Pi = 15^m.2$. $D = 0.16$ P.

33. $\text{Min}_\Pi = 15^m.68$. $D = 0.10$: P.

34. $D = 0.16$: P. Twice longer period is possible.

36. $\text{Min}_\Pi = 16^m.8$:

37. Twice longer period is possible.

38. $\text{Min}_\Pi = 15^m.93$.

39. $\text{Min}_\Pi = 15^m.44$.

40. $\text{Min}_\Pi = 15^m.04$. $D = 0.17$ P.

41. $\text{Min}_\Pi = 14^m.88$. $D = 0.18$ P.

46. The star became brighter by $0^m.06$ between 2012 and 2014. The magnitude ranges within the observational seasons are: $13^m.31$ – $13^m.36$ in 2012, $13^m.36$ – $13^m.46$ in 2014.

47. $\text{Min}_\Pi = 15^m.53$.

48. $\text{Min}_\Pi = 15^m.04$.

Remarks:

We present the third part of our discoveries of variable stars in Lacerta: area of $2^\circ.3 \times 2^\circ.3$, centered at $\alpha=22^h50^m \delta=54^\circ00'$. Some of the objects are newly discoveries, some are already known from large scale surveys like ZTF and ASAS-SN.

Our observations of an area in Lacerta were performed at the observatory of the Reshetnev Siberian State University of Science and Technology with a Hamilton telescope ($D = 400$ mm, $F = 915$ mm), equipped with an FLI ML9000 CCD chip (3056×3056 pixels, pixel size $12 \mu\text{m}$). Exposures of all frames were 30 seconds. A CCD image covers $2^\circ.3 \times 2^\circ.3$ of the sky.

All unfiltered CCD observations were obtained during two time intervals: August–October 2012 and September–October 2014.

The magnitudes were referred to those of comparison stars (in unfiltered red band) from the UCAC4 catalog (Zacharias et al. 2013) using [VaST](#) software (Sokolovsky and Lebedev 2018). We also used [VaST](#) to search for new variable stars. To define periods, we applied WinEfk software provided by Dr. V. P. Goranskij.

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Zacharias, N., Finch, C. T., et al., 2013, *The Fourth US Naval Observatory CCD Astrograph Catalog (UCAC4)*