

A close-up, high-resolution photograph of a person's face, focusing on the eyes. The person has light skin and dark, well-defined eyebrows. The left eye is prominently featured, showing a vibrant green iris with intricate patterns and a dark pupil. The right eye is partially visible on the right side of the frame. The lighting is soft, highlighting the texture of the skin and the details of the eyes.

Some **open clusters** I didn't discover

Auke Slotegraaf

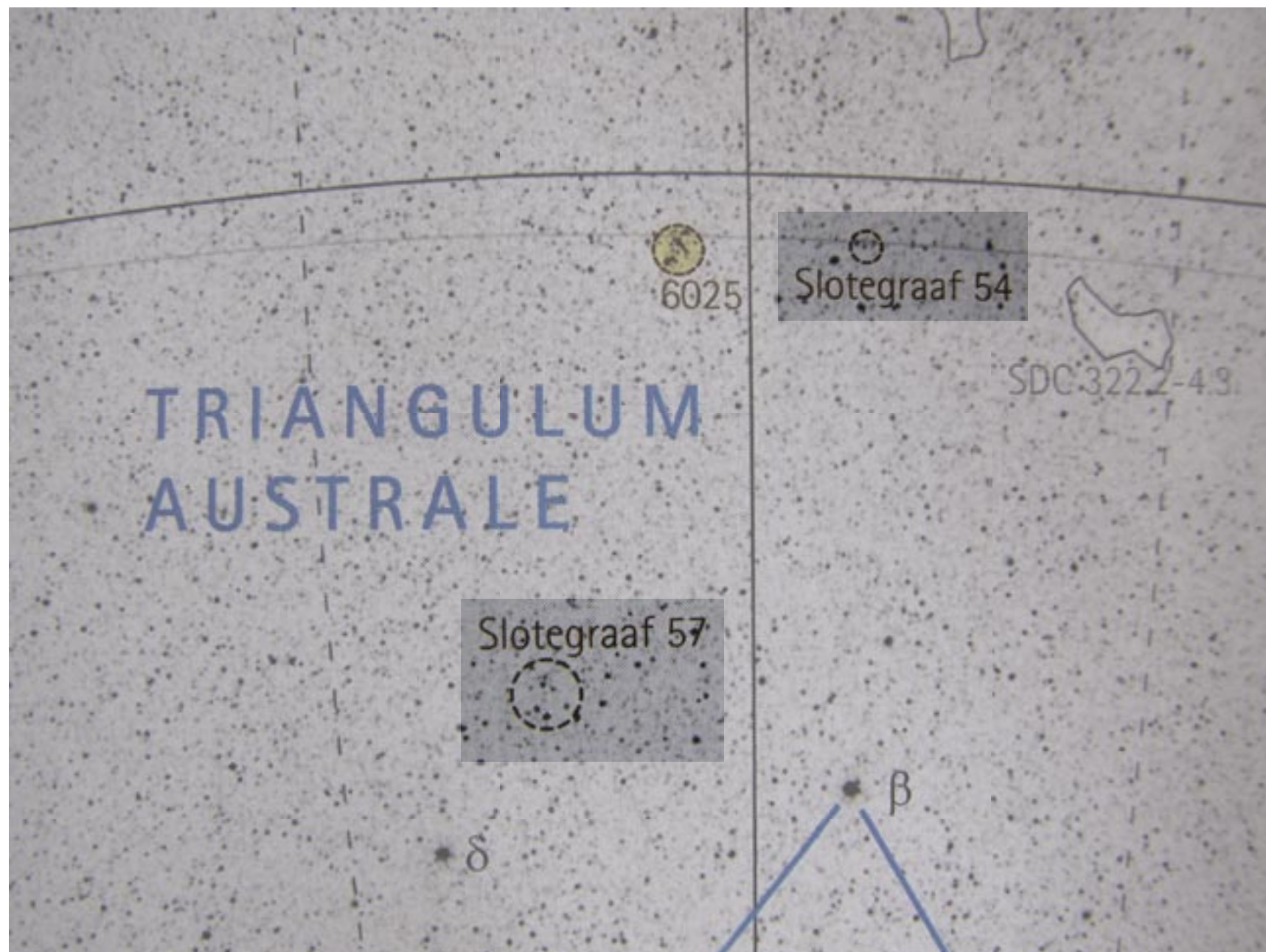
ASSA Deep-sky Section

www.psychohistorian.org

THE CAMBRIDGE Photographic Star Atlas

Axel Mellinger and Ronald Stoyan

Designation	Chart	NGC 6940	21	Perseus 1	40	Sa 109	76	Shapley 51	77	5. 23	77
NGC 6416	64	NGC 6967	31	Perseus 2	5	Sa 110	77	Shapley 54	77	5. 24	68
NGC 6425	64	NGC 6991	13	Perseus 31	2	Sa 112	77	Shapley 57	77	5. 25	68
NGC 6426	46	NGC 6992/5	31	Perseus 54	5	Sa 115	77	Shapley 57	77	5. 26	68
NGC 6440	14	NGC 7000	13, 14	Perseus 40	10	Sa 116	77	Shapley 57	77	5. 27	68
NGC 6441	64		31	Perseus 50	48	Sa 116	77	Shapley 57	77	5. 28	68
NGC 6451	64	NGC 7008	14	Perseus 70	38	Sa 120	77	Shapley 57	77	5. 29	68
NGC 6456	64	NGC 7009	49	Perseus 100	32	Sa 121	81	Shapley 57	77	5. 30	68
NGC 6503	12	NGC 7021	14	Perseus 1	38	Sa 122	77	Shapley 57	77	5. 31	68
NGC 6517	47	NGC 7024	31	Perseus 1	26	Sa 123	77	Shapley 57	77	5. 32	68
NGC 6520	65	NGC 7027	31	Perseus 2	40	Sa 124	77	Shapley 57	77	5. 33	68
NGC 6525	47	NGC 7031	14	Perseus 4	52	Sa 125	77	Shapley 57	77	5. 34	68
NGC 6536	47	NGC 7032	14	Perseus 10	74	Sa 126	77	Shapley 57	77	5. 35	68
NGC 6547	65	NGC 7039	14	Perseus 1	30	Sa 127	77	Shapley 57	77	5. 36	68
NGC 6549	12	NGC 7044	31	Perseus 1	12	Sa 128	77	Shapley 57	77	5. 37	68
NGC 6544	65	NGC 7045	14	Perseus 4	14	Sa 129	77	Shapley 57	77	5. 38	68
NGC 6546	65	NGC 7046	14	Perseus 8	5	Sa 130	77	Shapley 57	77	5. 39	68
NGC 6553	65	NGC 7049	31	Perseus 11	42	Sa 131	77	Shapley 57	77	5. 40	68
NGC 6566	65	NGC 7050	80	Perseus 17	39	Sa 132	77	Shapley 57	77	5. 41	68
NGC 6569	65	NGC 7054	31	Perseus 30	47	Sa 133	77	Shapley 57	77	5. 42	68
NGC 6584	26	NGC 7056	14	Perseus 3	40	Sa 134	77	Shapley 57	77	5. 43	68
NGC 6586	65	NGC 7113	14	Perseus 4	40	Sa 135	77	Shapley 57	77	5. 44	68
NGC 6589	65	NGC 7122	14	Perseus 6	20	Sa 136	77	Shapley 57	77	5. 45	68
NGC 6604	47	NGC 7141	14	Perseus 9	50	Sa 137	77	Shapley 57	77	5. 46	68
NGC 6605	47	NGC 7150	14	Perseus 11	30	Sa 138	77	Shapley 57	77	5. 47	68
NGC 6624	65	NGC 7172	46	Perseus 15	46	Sa 139	77	Shapley 57	77	5. 48	68
NGC 6625	47	NGC 7176	46	Perseus 18	47	Sa 140	77	Shapley 57	77	5. 49	68
NGC 6630	47	NGC 7199	50	Perseus 10	52	Sa 141	77	Shapley 57	77	5. 50	68
NGC 6636	47	NGC 7204	14	Perseus 2	31	Sa 142	77	Shapley 57	77	5. 51	68
NGC 6643	12	NGC 7217	32	Perseus 6	87	Sa 143	77	Shapley 57	77	5. 52	68
NGC 6646	66	NGC 7235	14	Perseus 17	4	Sa 144	77	Shapley 57	77	5. 53	68
NGC 6649	47	NGC 7249	14	Perseus 10	16	Sa 145	77	Shapley 57	77	5. 54	68
NGC 6651	65	NGC 7249	14	Perseus 21	6	Sa 146	77	Shapley 57	77	5. 55	68
NGC 6664	47	NGC 7261	14	Perseus 25	27	Sa 147	77	Shapley 57	77	5. 56	68
NGC 6662	47	NGC 7281	14	Perseus 27	47	Sa 148	77	Shapley 57	77	5. 57	68
NGC 6685	47	NGC 7333	46	Perseus 3	3	Sa 149	77	Shapley 57	77	5. 58	68
NGC 6704	47	NGC 7396	14	Perseus 1	30	Sa 150	77	Shapley 57	77	5. 59	68
NGC 6709	47	NGC 7394	46	Perseus 2	30	Sa 151	77	Shapley 57	77	5. 60	68
NGC 6712	47	NGC 7397	30	Perseus 3	30	Sa 152	77	Shapley 57	77	5. 61	68
NGC 6716	65	NGC 7391	31	Perseus 4	30	Sa 153	77	Shapley 57	77	5. 62	68
NGC 6723	65	NGC 7392	14	Perseus 5	30	Sa 154	77	Shapley 57	77	5. 63	68
NGC 6726	47	NGC 7393	14	Perseus 7	21	Sa 155	77	Shapley 57	77	5. 64	68
NGC 6729	65	NGC 7395	50	Perseus 10	56	Sa 156	77	Shapley 57	77	5. 65	68
NGC 6736	47	NGC 7410	46	Perseus 20	57	Sa 157	77	Shapley 57	77	5. 66	68
NGC 6740	30	NGC 7416	46	Perseus 27	57	Sa 158	77	Shapley 57	77	5. 67	68
NGC 6744	30	NGC 7419	14	Perseus 55	57	Sa 159	77	Shapley 57	77	5. 68	68
NGC 6752	79	NGC 7424	46	Perseus 56	57	Sa 160	77	Shapley 57	77	5. 69	68
NGC 6755	47	NGC 7425	14	Perseus 64	57	Sa 161	77	Shapley 57	77	5. 70	68
NGC 6760	47	NGC 7438	14	Perseus 65	57	Sa 162	77	Shapley 57	77	5. 71	68
NGC 6774	65	NGC 7479	50	Perseus 71	31	Sa 163	77	Shapley 57	77	5. 72	68
NGC 6776	47	NGC 7495	46	Perseus 78	74	Sa 164	77	Shapley 57	77	5. 73	68
NGC 6781	47	NGC 7500	3	Perseus 76	34	Sa 165	77	Shapley 57	77	5. 74	68
NGC 6786	44	NGC 7529	3	Perseus 88	74	Sa 166	77	Shapley 57	77	5. 75	68
NGC 6791	30	NGC 7532	46	Perseus 91	74	Sa 167	77	Shapley 57	77	5. 76	68
NGC 6793	30	NGC 7547	46	Perseus 96	75	Sa 168	77	Shapley 57	77	5. 77	68
NGC 6800	30	NGC 7606	50	Perseus 105	75	Sa 169	77	Shapley 57	77	5. 78	68
NGC 6803	30	NGC 7605	3	Perseus 108	75	Sa 170	77	Shapley 57	77	5. 79	68
NGC 6811	12	NGC 7640	15	Perseus 135	46	Sa 171	77	Shapley 57	77	5. 80	68
NGC 6818	44	NGC 7662	15	Perseus 139	46	Sa 172	77	Shapley 57	77	5. 81	68
NGC 6819	30	NGC 7666	2	Perseus 144	47	Sa 173	77	Shapley 57	77	5. 82	68
NGC 6823	44	NGC 7686	3	Perseus 145	46	Sa 174	77	Shapley 57	77	5. 83	68
NGC 6825	30	NGC 7713	51	Perseus 157	57	Sa 175	77	Shapley 57	77	5. 84	68
NGC 6826	12	NGC 7743	31	Perseus 159	74	Sa 176	77	Shapley 57	77	5. 85	68
NGC 6829	44	NGC 7762	3	Perseus 160	74	Sa 177	77	Shapley 57	77	5. 86	68
NGC 6830	30	NGC 7772	16	Perseus 162	75	Sa 178	77	Shapley 57	77	5. 87	68
NGC 6834	30	NGC 7788	3	Perseus 165	75	Sa 179	77	Shapley 57	77	5. 88	68
NGC 6840	44	NGC 7789	3	Perseus 167	76	Sa 180	77	Shapley 57	77	5. 89	68
NGC 6846	44	NGC 7790	3	Sa 130	34	Sa 181	77	Shapley 57	77	5. 90	68
NGC 6866	30	NGC 7793	51	Sa 133	74	Sa 182	77	Shapley 57	77	5. 91	68
NGC 6871	30	NGC 7795	3	Sa 134	74, 75	Sa 183	77	Shapley 57	77	5. 92	68
NGC 6883	30	NGC 7801	3	Sa 135	75	Sa 184	77	Shapley 57	77	5. 93	68
NGC 6885	30	NGC 7814	15	Sa 136	75	Sa 185	77	Shapley 57	77	5. 94	68
NGC 6888	30	NGC 7821	3	Sa 137	75	Sa 186	77	Shapley 57	77	5. 95	68
NGC 6891	44	NGC 7828	51	Sa 138	75	Sa 187	77	Shapley 57	77	5. 96	68
NGC 6895	30	NGC 7840	5	Sa 139	75	Sa 188	77	Shapley 57	77	5. 97	68
NGC 6899	30	NGC 7841	5	Sa 140	75	Sa 189	77	Shapley 57	77	5. 98	68
NGC 6900	30	NGC 7842	5	Sa 141	75	Sa 190	77	Shapley 57	77	5. 99	68
NGC 6904	30	NGC 7843	5	Sa 142	75	Sa 191	77	Shapley 57	77	5. 100	68
NGC 6908	30	NGC 7844	5	Sa 143	75	Sa 192	77	Shapley 57	77	5. 101	68
NGC 6910	30	NGC 7845	5	Sa 144	75	Sa 193	77	Shapley 57	77	5. 102	68
NGC 6914	30	NGC 7846	5	Sa 145	75	Sa 194	77	Shapley 57	77	5. 103	68
NGC 6918	30	NGC 7847	5	Sa 146	75	Sa 195	77	Shapley 57	77	5. 104	68
NGC 6920	30	NGC 7848	5	Sa 147	75	Sa 196	77	Shapley 57	77	5. 105	68
NGC 6924	30	NGC 7849	5	Sa 148	75	Sa 197	77	Shapley 57	77	5. 106	68
NGC 6928	30	NGC 7850	5	Sa 149	75	Sa 198	77	Shapley 57	77	5. 107	68
NGC 6930	30	NGC 7851	5	Sa 150	75	Sa 199	77	Shapley 57	77	5. 108	68
NGC 6934	30	NGC 7852	5	Sa 151	75	Sa 200	77	Shapley 57	77	5. 109	68
NGC 6938	30	NGC 7853	5	Sa 152	75	Sa 201	77	Shapley 57	77	5. 110	68
NGC 6940	30	NGC 7854	5	Sa 153	75	Sa 202	77	Shapley 57	77	5. 111	68
NGC 6942	30	NGC 7855	5	Sa 154	75	Sa 203	77	Shapley 57	77	5. 112	68
NGC 6944	30	NGC 7856	5	Sa 155	75	Sa 204	77	Shapley 57	77	5. 113	68
NGC 6946	30	NGC 7857	5	Sa 156	75	Sa 205	77	Shapley 57	77	5. 114	68
NGC 6948	30	NGC 7858	5	Sa 157	75	Sa 206	77	Shapley 57	77	5. 115	68
NGC 6950	30	NGC 7859	5	Sa 158	75	Sa 207	77	Shapley 57	77	5. 116	68
NGC 6952	30	NGC 7860	5	Sa 159	75	Sa 208	77	Shapley 57	77	5. 117	68
NGC 6954	30	NGC 7861	5	Sa 160	75	Sa 209	77	Shapley 57	77	5. 118	68
NGC 6956	30	NGC 7862	5	Sa 161	75	Sa 210	77	Shapley 57	77	5. 119	68
NGC 6958	30	NGC 7863	5	Sa 162	75	Sa 211	77	Shapley 57	77	5. 120	68
NGC 6960	30	NGC 7864	5	Sa 163	75	Sa 212	77	Shapley 57	77	5. 121	68
NGC 6962	30	NGC 7865	5	Sa 164	75	Sa 213	77	Shapley 57	77	5. 122	68
NGC 6964	30	NGC 7866	5	Sa 165	75	Sa 214	77	Shapley 57	77	5. 123	68
NGC 6966	30	NGC 7867	5	Sa 166	75	Sa 215	77	Shapley 57	77	5. 124	68
NGC 6968	30	NGC 7868	5	Sa 167	75	Sa 216	77	Shapley 57	77	5. 125	68
NGC 6970	30	NGC 7869	5	Sa 168	75	Sa 217	77	Shapley 57	77	5. 126	68
NGC 6972	30	NGC 7870	5	Sa 169	75	Sa 218	77	Shapley 57	77	5. 127	68
NGC 6974	30	NGC 7871	5	Sa 170	75	Sa 219	77	Shapley 57	77	5. 128	68
NGC 6976	30	NGC 7872	5	Sa 171	75	Sa 220	77	Shapley 57	77	5. 129	68
NGC 6978	30	NGC 7873	5	Sa 172	75	Sa 221					



Designation	Chart	NOC 6040	31	Polaris 1	41	Sa 108	18	Slotegraaf 51	77	N 21	77
NOC 6018	64	NOC 6067	31	Polaris 2	5	Sa 170	77	Slotegraaf 54	77	N 24	69
NOC 6075	64	NOC 6091	13	Polaris 11	3	Sa 171	77	Slotegraaf 57	77	N 25	68
NOC 6080	64	NOC 6090	14	Polaris 12	41	Sa 172	77	Slotegraaf 57	77	N 26	69
										N 27	68
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										N 99	67
										N 100	67



A deep-field astronomical image showing a vast field of stars against a black background. The stars vary in brightness and color, with many appearing as white or blue points of light. Some stars have prominent diffraction spikes. The text is overlaid in the upper left quadrant.

~ 2 000 known

~ 100 000 expected



< 10' diameter
< 20 members

2 000 known, 100 000 expected



$\sim 10^6 - 10^{10}$ years old

2 000 known, 100 000 expected
< 10' diameter, < 20 members



2 000 known, 100 000 expected
< 10' diameter, < 20 members
 $10^6 - 10^{10}$ years old

position, distance, reddening, velocity, metallicity

Study the Milky Way

spatial scale

spiral structure

dynamics

evolution

ISM

2 000 known, 100 000 expected

< 10' diameter, < 20 members

$10^6 - 10^{10}$ years old

position, distance, reddening, velocity, metallicity



NGC 6067 (Dieter Willasch)

Field star contamination



Messier 7 (Brett du Preez & Auke Slotegraaf)

Cluster dissolution

ESO 435-SC48

POSS2/UKSTU Red, 30' x 30'

Rev. John Michell



Open cluster score board

John Herschel	452
William Herschel	181
James Dunlop	127
Lacaille	15
Charles Messier	11
Giovan Hodierna	10

Modern studies

1980s Lynga's Lund catalogue

1990s Mermilliod's 'Bas des Amas'

2000s Wilton Dias et al.

2010s Sergey Koposov et al.

For the record

Modern designation	Earlier identification
Alessi J0123-33	PerthAC (1912) Perth3-98: "nf of group" (Slotegraaf 1)
Alessi J0304-51	Brisbane (1835) B483: "cluster of a few small stars" (Slotegraaf 2)
Alessi J0753-34	PerthAC (1912) Perth3-600/3-603: "sf group" (Slotegraaf 14)
Alessi J0812-35	PerthAC (1912) Perth3-627: "p group" (Slotegraaf 17)
Alessi J1121-60	Brisbane (1835) B3549: "cluster" (Slotegraaf 34)
Alessi J1156-63	Brisbane (1835) B3823: "a few vS *" (Slotegraaf 39)
BH 99	Brisbane (1835) B3127: "cluster" (Slotegraaf 28)
Collinder 240	Brisbane (1835) B3462: "a very fine small cluster"
Collinder 132	Brisbane (1835) B1522: "A great no of 6m* cursorily scattered" (Slotegraaf 12)
Harrington 2	Brisbane (1835) B549/555/556: "cluster thinly scattered" (Slotegraaf 3)
IC 2391	Lacaille (1752), Brisbane (1835) B2148
IC 2395	Lacaille (1752)
IC 2488	Lacaille (1752), BAC (1845) #3247, Taylor (1844), Stone (1881), Gould (1886)
IC 2602	Lacaille (1755)
Johansson 1	Brisbane (1835) B5483: "several * in field" (Slotegraaf 52)
NGC 3572	Lacaille CAS (1763) #1001, Brisbane (1835) B3462 (Slotegraaf 32a)
Ruprecht 94	Brisbane (1835) B3606: "prodig. number small stars very close" (Slotegraaf 36)
Ruprecht 105	Brisbane (1835) B4109: "several stars in field" (Slotegraaf 41)
Stock 14	Brisbane (1835) B3739: "bright star in centre of very fine cluster" (Slotegraaf 38)
Te J0422-32	PerthAC (1912) Perth4-360: "north of group" (Slotegraaf 7)
Trumpler 10	Lacaille (1752), Brisbane (1835) B2208 & B2210, Gould (1886)
Trumpler 16	Lacaille CAS (1763) #968, Brisbane (1835) B3198 (Slotegraaf 29)
Trumpler 24	Brisbane (1835) B5891: "A number of stars in the field"

Asterisms? Open cluster remnants?

Designation	Original discovery	Other identification	RA (J2000.0) Dec
Slotegraaf 5	1755, Lacaille, Cape Town (II.1)	DSH J0402.9-4428	04 02 40 -44 31.5
Slotegraaf 8	1835, Dunlop & Rumker, Paramatta (B 736)	DSH J0425.4-6542	04 25 29 -65 42.0
Slotegraaf 10	1835, Dunlop & Rumker, Paramatta (B 1412)	DSH J0657.2-3530	06 57 17 -35 30.6
Slotegraaf 20	1912, Ernest Cook, Perth (Perth 3-646)	DSH J0827.9-3505	08 27 57 -35 05.6
Slotegraaf 35	1755, Lacaille, Cape Town (II.11)	DSH J1122.5-5820	11 22 30 -58 20.3
Slotegraaf 40	1835, Dunlop & Rumker, Paramatta (B 4004/2)	DSH J1224.8-6546	12 24 52 -65 46.0
Slotegraaf 42	1835, Dunlop & Rumker, Paramatta (B 4195)	DSH J1248.7-7214	12 48 43 -72 14.3
Slotegraaf 51	1835, Dunlop & Rumker, Paramatta (B 5389)	DSH J1537.8-5425	15 37 53 -54 25.3
Slotegraaf 54	1835, Dunlop & Rumker, Paramatta (B 5507)	DSH J1554.5-6023	15 54 35 -60 23.3
Slotegraaf 57	1835, Dunlop & Rumker, Paramatta (B 5583)	DSH J1608.6-6251	16 08 41 -62 51.5





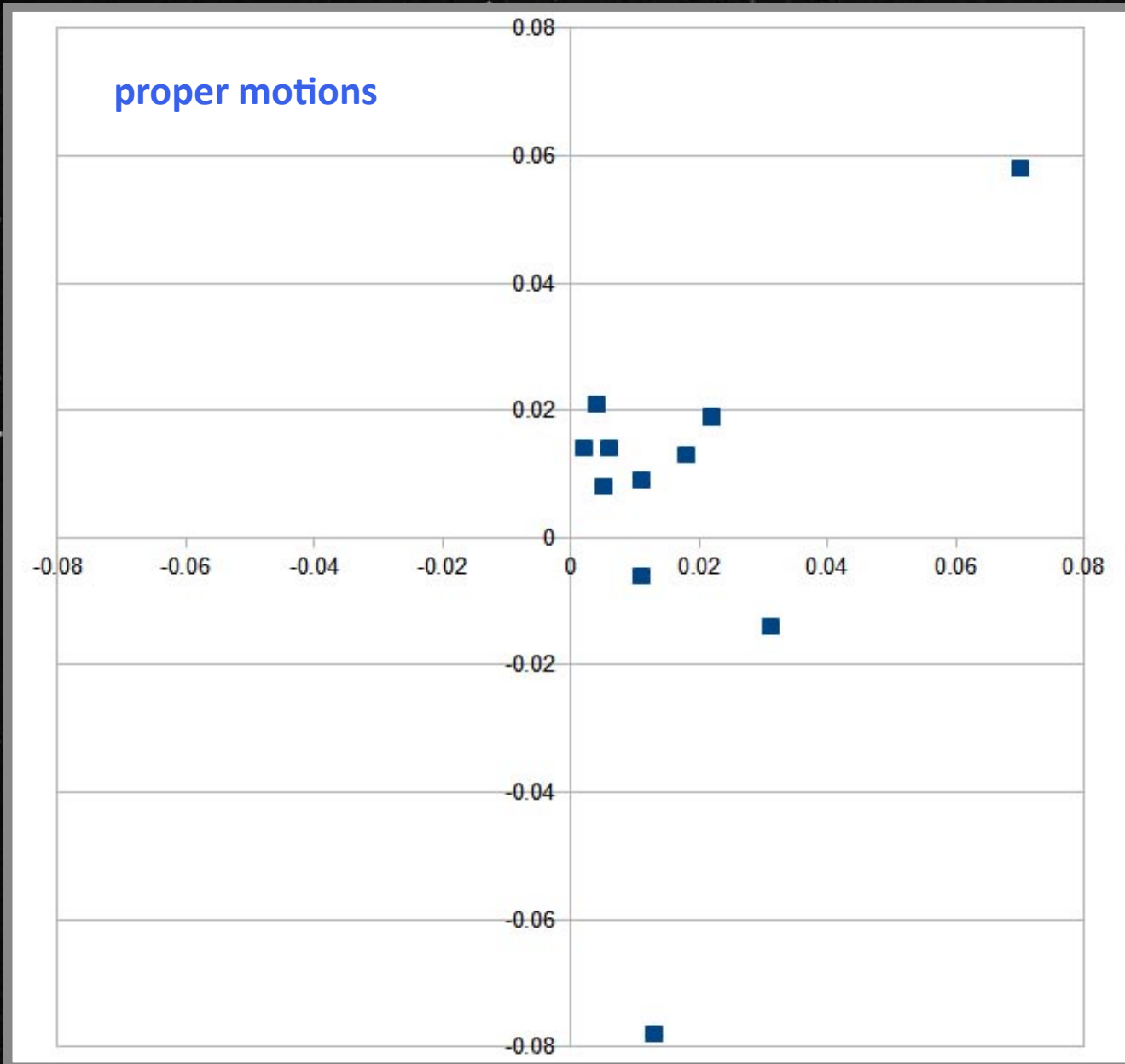
Lacaille II.1



Camb. Phot. Star Atlas (2011)

POSS2/UKSTU Blue, 1° x 1°

Lacaille II.1



Proper motions from Tycho-2

A close-up, high-resolution photograph of a person's face, focusing on the eyes. The person has light skin and dark, well-defined eyebrows. The left eye is prominently featured, showing a vibrant green iris with intricate patterns of yellow and blue. The right eye is partially visible on the right side of the frame, appearing dark. The lighting is soft, highlighting the texture of the skin and the details of the eyes.

Deep-sky **Hunters**

<http://groups.yahoo.com/group/deepskyhunters>