

Illustrations

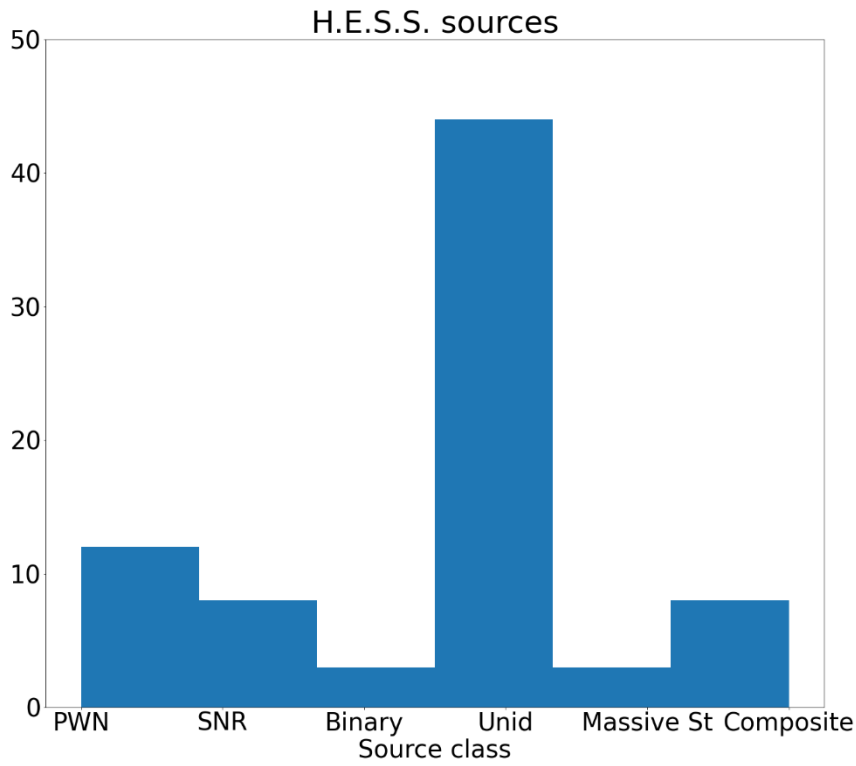


Figure 1: Histogram of the sources detected by H.E.S.S. during the HGPS, sorted by association

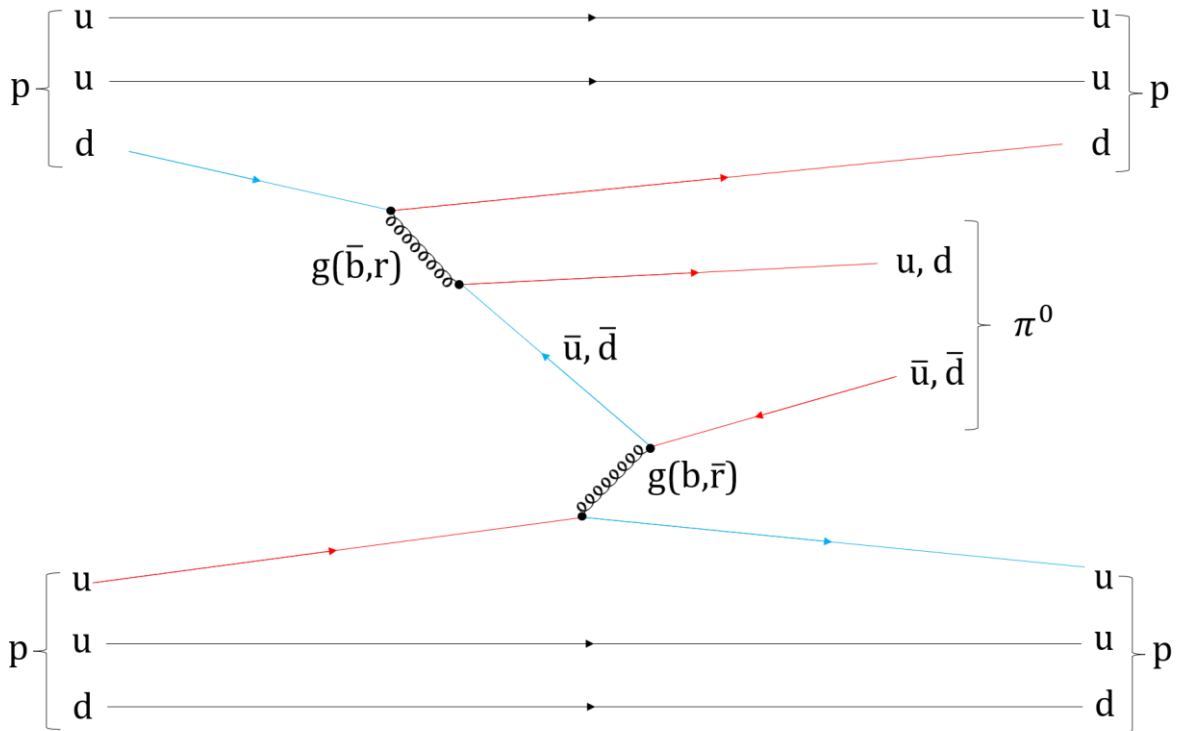


Figure 2: Example Feynman diagram for pion production

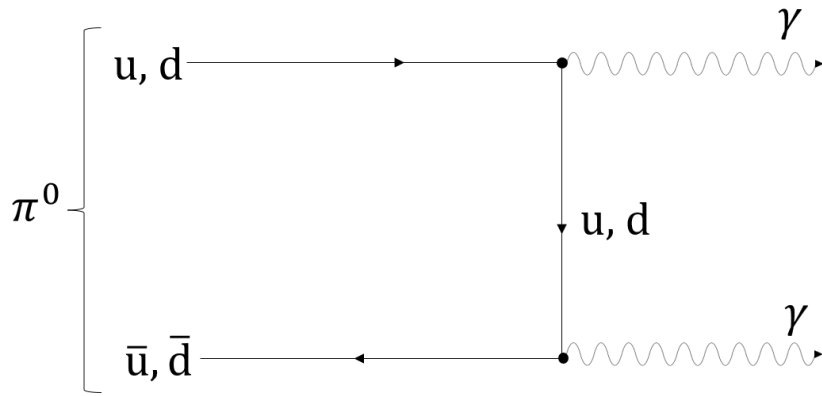


Figure 3: Feynman diagram for pion decay

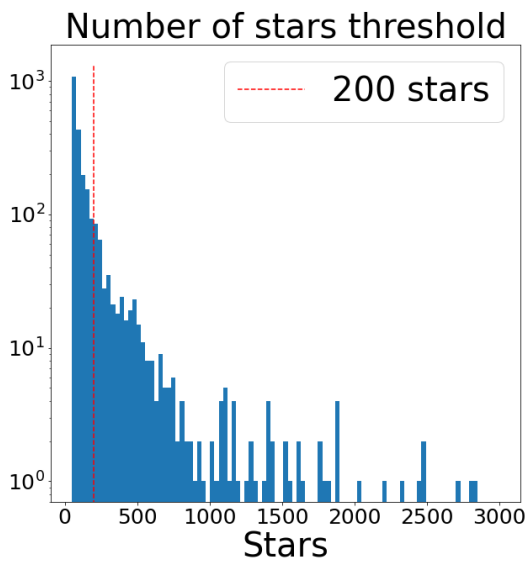


Figure 4: Extract from the histogram showing the number of stars per cluster in the star cluster catalogue

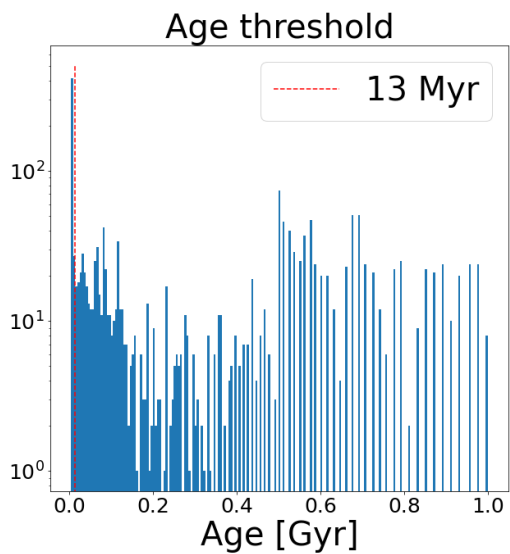


Figure 5: Extract from the histogram showing cluster ages in 10^9 years

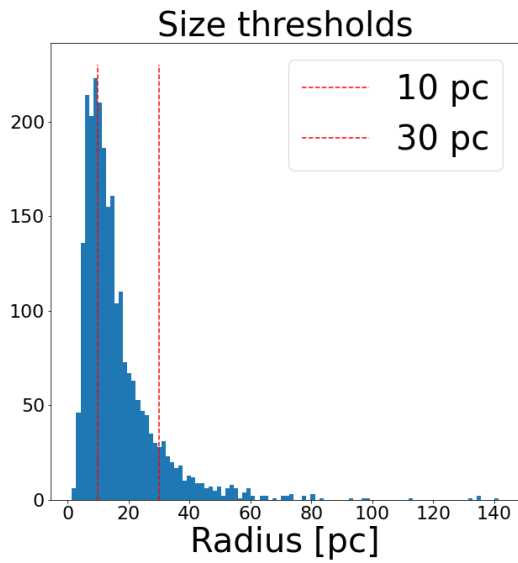


Figure 6: Histogram showing the cluster radii in parsec (pc)

	Group 1	Group 2	Group 3	Group 4
Age [10^6 years]	≤ 13	≤ 13	≤ 13	≤ 13
Number of stars	≥ 200	≥ 200	≥ 200	≤ 200
Size [pc]	≤ 10		≥ 30	

Table 1: Selection criteria for the star cluster groups (Groups 1 to 4)

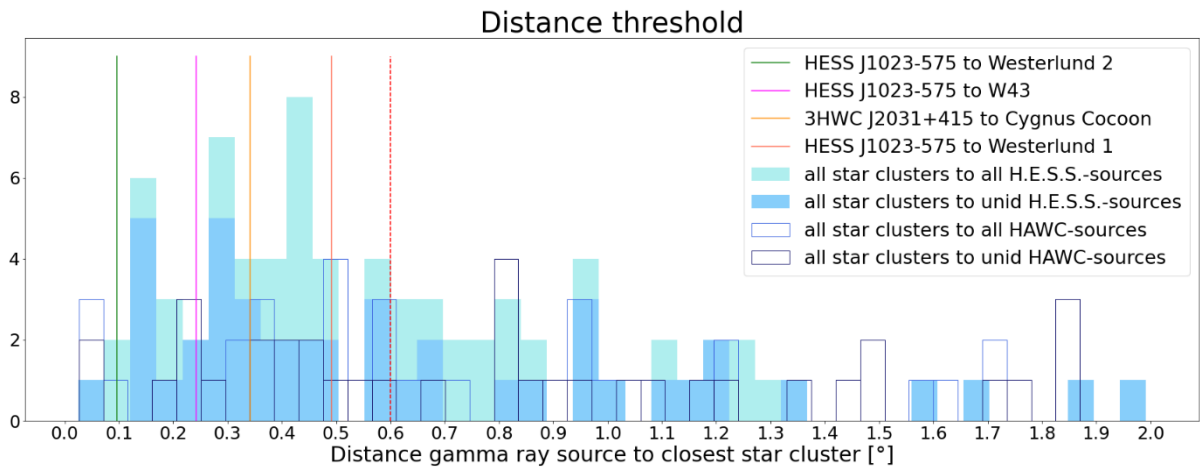


Figure 7: Histogram of the distance in degrees to the nearest gamma source from the star clusters in the GAIA DR2 catalogue

Group	ID													
1	154	226	276	281	407	410	430	440	444	446	447	1204	2110	2254
	2324	2367	2369	2416										
2	33	50	53	72	84	120	134	142	149	154	161	168	176	177
	179	207	215	226	237	262	263	266	276	281	346	352	355	407
	410	411	430	440	444	446	447	453	457	482	484	495	498	501
	514	524	528	533	537	542	543	544	546	552	554	558	563	566
	653	783	864	901	1204	1222	1313	1323	1815	1846	1849	1869	1871	1872
	2082	2092	2110	2161	2196	2221	2234	2249	2254	2288	2324	2367	2369	2370
	2372	2373	2381	2385	2387	2394	2416	2442						
3	72	176	177	179	207	215	346	355	457	514	533	537	542	544
	546	552	554	563	566	1323	1815	1869	1871	1872				
4	8	26	36	52	55	82	92	114	139	146	148	169	188	189
	199	205	213	218	225	232	243	254	259	270	271	272	283	297
	301	304	312	322	344	345	348	359	361	373	379	403	409	417
	433	439	458	468	478	493	498	499	503	506	512	517	519	521
	532	547	550	561	572	600	613	657	664	671	682	723	724	759
	761	768	770	771	775	778	780	801	808	811	815	818	824	832
	833	844	848	854	857	858	869	881	882	884	885	887	890	897
	901	908	913	916	917	919	920	921	922	929	931	933	934	935
	936	950	951	952	956	961	963	968	974	984	991	997	1011	1016
	1018	1022	1026	1033	1035	1052	1053	1063	1064	1070	1072	1076	1078	1088
	1103	1106	1110	1117	1118	1120	1122	1124	1145	1154	1160	1174	1178	1196
	1212	1227	1242	1250	1251	1271	1274	1275	1292	1316	1317	1321	1322	1325
	1330	1333	1337	1339	1343	1347	1349	1350	1351	1361	1363	1367	1382	1392
	1404	1409	1411	1415	1417	1418	1420	1427	1430	1435	1443	1444	1453	1465
	1466	1470	1477	1481	1482	1487	1493	1503	1514	1520	1521	1523	1528	1529
	1531	1532	1535	1537	1548	1556	1557	1558	1560	1563	1568	1572	1584	1588
	1597	1601	1609	1613	1618	1619	1627	1630	1634	1636	1639	1640	1647	1670
	1678	1715	1738	1751	1760	1763	1766	1777	1778	1783	1793	1796	1799	1801
	1818	1821	1822	1827	1845	1851	1852	1853	1856	1863	1882	1884	1887	1890
	1904	1920	1921	1928	1948	1958	1961	1972	1982	1988	1989	1990	1991	1997
2045	2047	2050	2056	2062	2071	2072	2075	2077	2089	2095	2104	2105	2106	
2107	2113	2114	2115	2130	2132	2135	2136	2142	2144	2154	2157	2163	2166	
2171	2177	2178	2179	2180	2182	2183	2184	2185	2197	2200	2213	2216	2218	
2224	2235	2245	2256	2262	2263	2270	2282	2284	2291	2306	2311	2313	2316	
2333	2343	2350	2352	2353	2377	2379	2392	2396	2402	2409	2439	2440		

Table 2: Star cluster IDs by group

Group 1		Group 2		Group 4	
1204	HESS J1741-302	262	HESS J1427-608	271	HESS J1614-518
		263	HESS J1427-608	1212	HESS J1800-240
		1204	HESS J1741-302	1613	HESS J1614-518
		1222	HESS J1841-055	1627	HESS J1804-216
				1639	HESS J1826-130
				1647	HESS J1841-055
				2115	HESS J1826-130
				2171	HESS J1844-030
				478	3HWC J1928+178
				1627	3HWC J1803-211
				2115	3HWC J1825-134

Table 3: Star cluster–gamma source pairs, by group

ID	Radius [pc]	Number of stars	Age [10^6 years]
262	15.001	1163	4
263	10.078	397	4
1204	8.575	325	4
1222	11.872	393	12

Table 4: Radius, number of stars and age of the Group 2 clusters with a gamma source nearby

ID	Radius [pc]	Number of stars	Age [10^6 years]
271	3.616	67	11
478	4.961	50	4
1212	8.577	53	5
1613	12.541	121	4
1627	8.171	62	4
1639	7.770	87	4
1647	7.419	87	4
2115	3.891	73	4
2171	9.785	56	4

Table 5: Radius, number of stars and age of the Group 4 clusters with a gamma source nearby

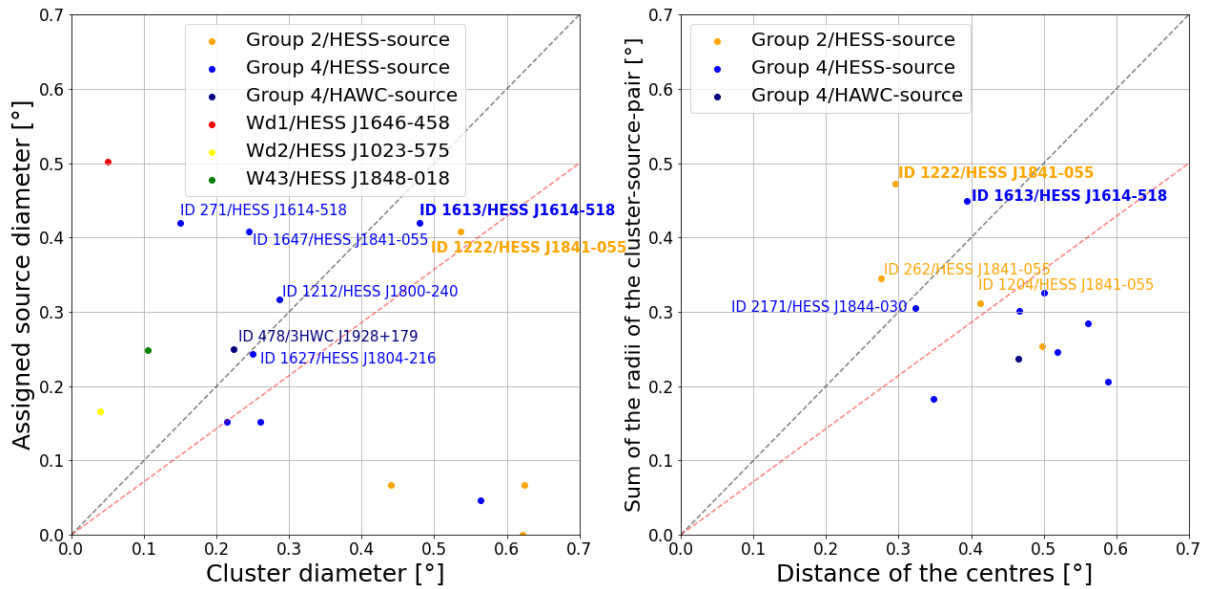


Figure 8: Diameter of an associated source against the diameter of its cluster (left) and sum of the radii of the source and cluster against the distance between the centres (right), for the Group 2 and 4 clusters (left and right) and for Wd1, Wd2 and W43 (left only)

ID	Name of source	Radius [pc]	Number of stars	Age [10^6 years]
1222	HESS J1841-055	11.872	393	12
1613	HESS J1614-518	12.541	121	5

Table 6: Final results (ID 1222/HESS J1841-055 and ID 1613/HESS J1614-518)

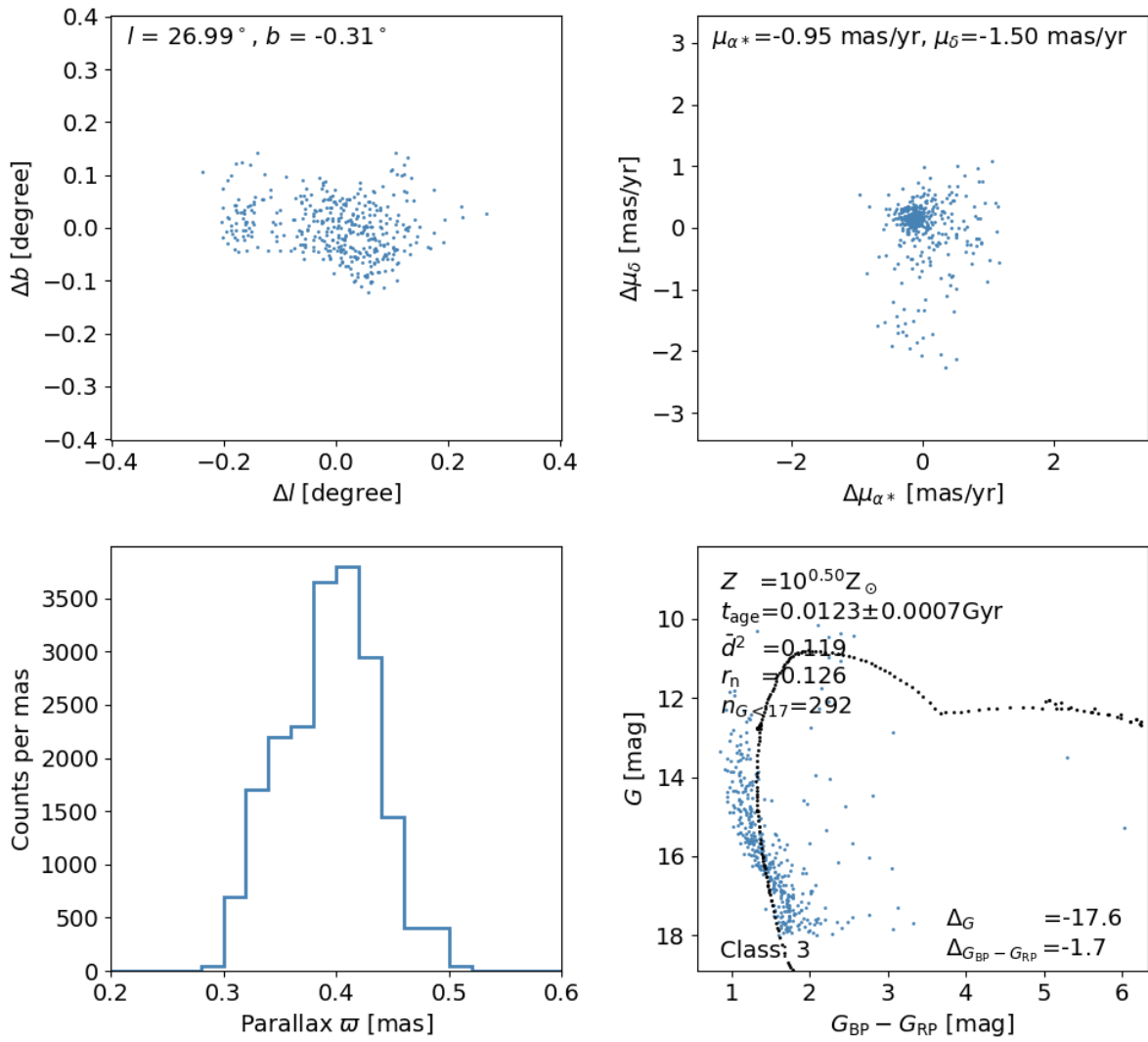


Figure 9: 4-field plot for star cluster ID 1222

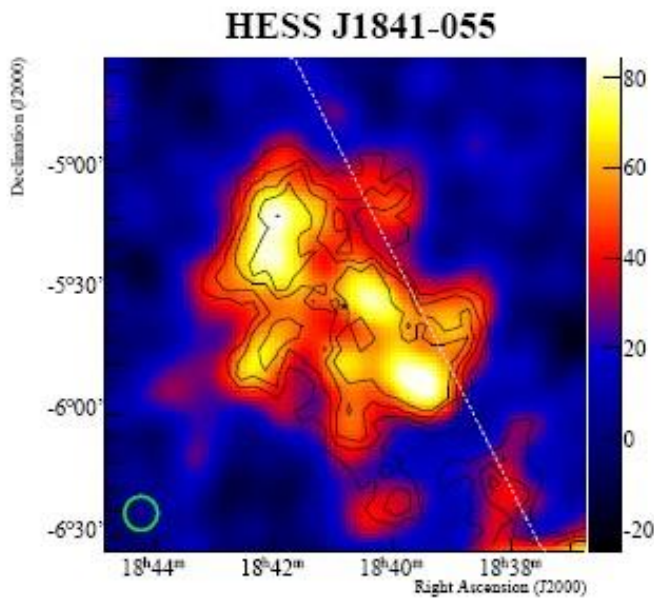


Figure 10: Gamma source HESS J1841-055

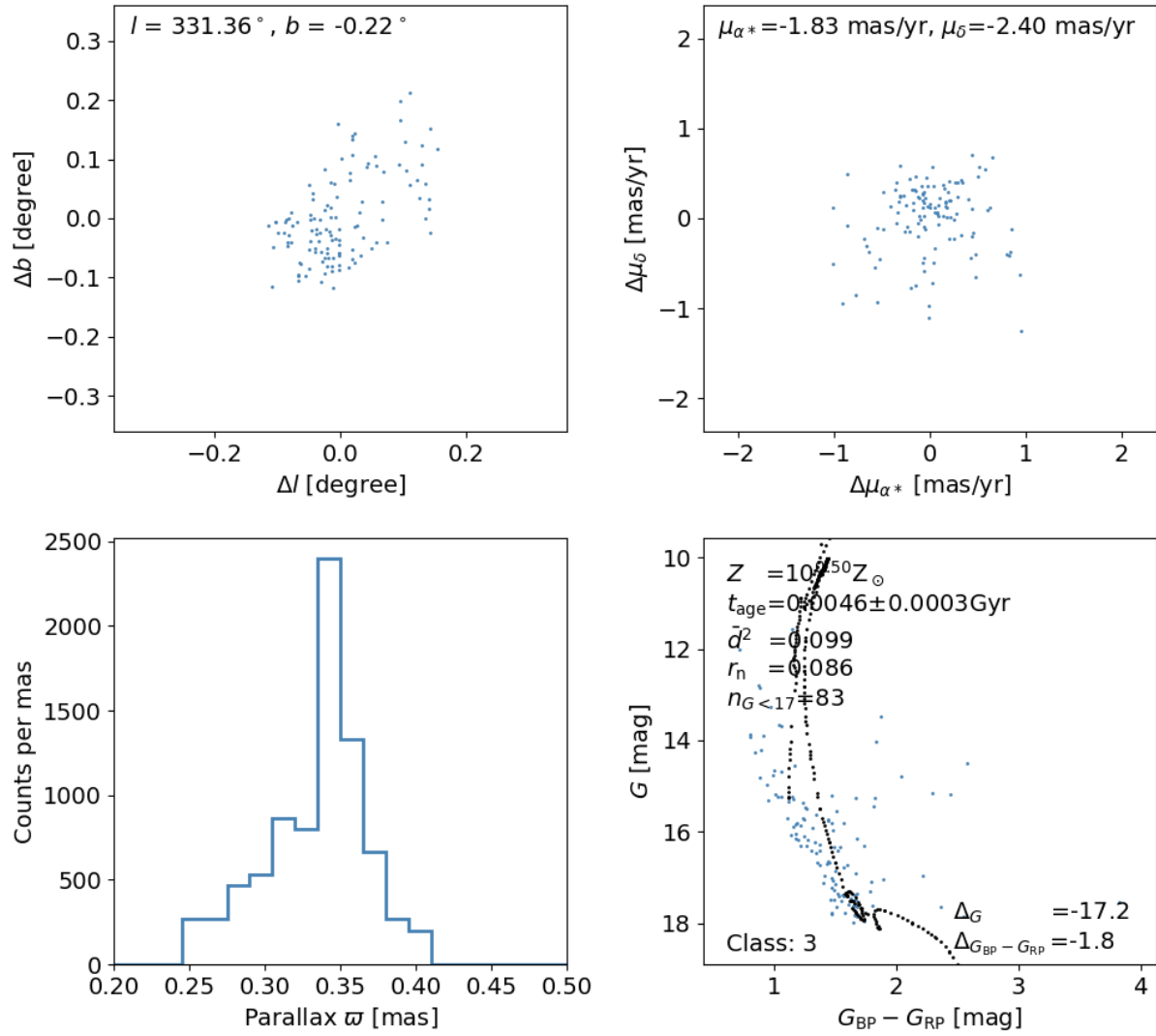


Figure 11: 4-field plot for star cluster ID 1613

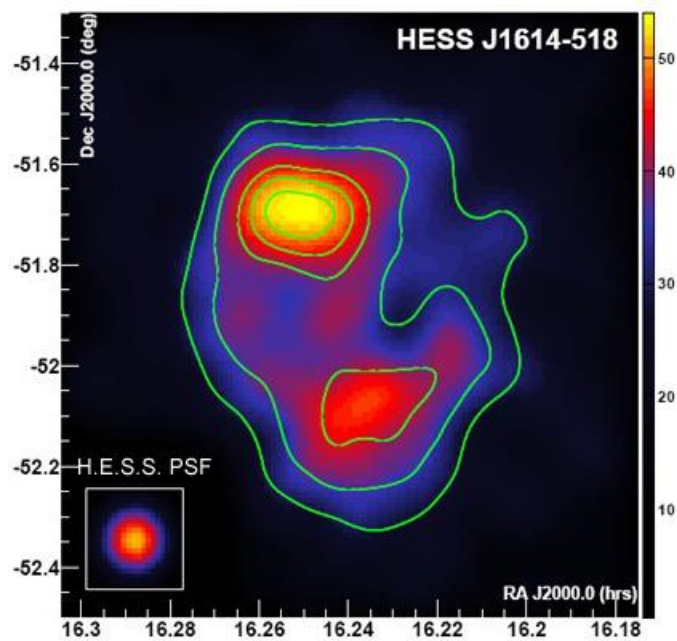


Figure 12: Gamma source HESS J1614-518

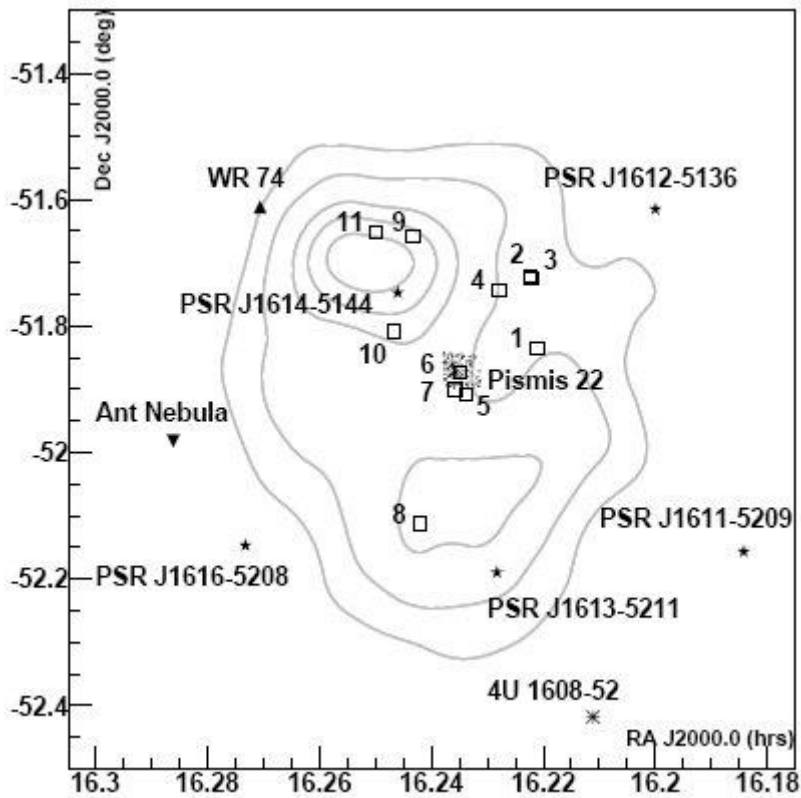


Fig. 13: Potential counterparts for the gamma source HESS J1614-518

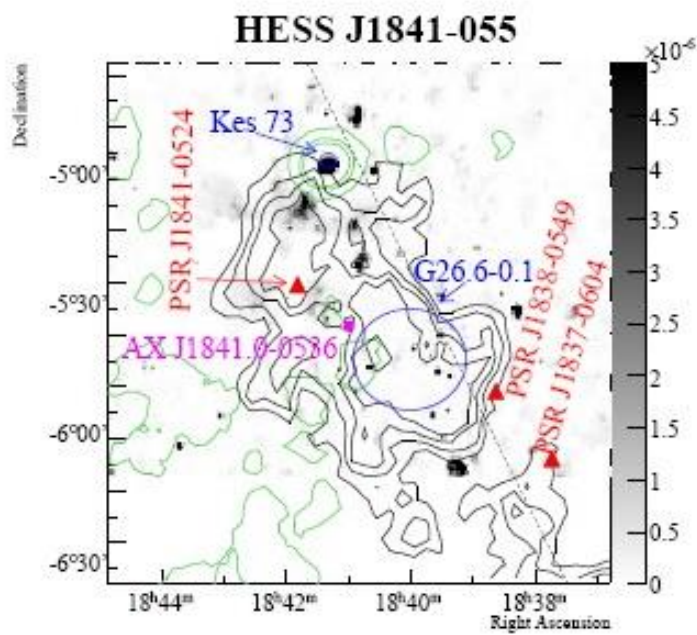


Fig. 14: Potential counterparts for the gamma source HESS J1841-055