

List of Common Deep Sky Catalogs (Seds.Org)

Below is a listing of the various more and less common catalogs of deep sky objects, together with abbreviations and a short description. This list is of course far from being comprehensive.

Besides these catalogs which are often used to designate objects, there are many [observing lists and catalogs](#) suitable for work-through and as databases, as well as [historic deepsky catalogs](#), which we do not include here.

General

M: [Messier](#)

[Charles Messier's Catalog](#) of [110 objects](#). First more reliable and comprehensive catalog of deep sky objects, *must-see* for amateurs.

NGC: New General Catalog

[J.L.E. Dreyer](#). *New General Catalogue of Nebulae and Clusters of Stars*. Mem. Roy. Astron. Soc. 49, Part I (1888) [[ADS: 1888MmRAS..49....1D](#)]. Reprinted 1912 and 1953. Attempt to compile a comprehensive list of all deep sky objects known at that time, including the catalogs of the Herschels and Lord Rosse. Most of these objects had been discovered visually.

IC: Index Catalog

[J.L.E. Dreyer](#). *Index Catalogue of Nebulae Found in the Years 1888 to 1894, with Notes and Corrections to the New General Catalogue*. Mem. Roy. Astron. Soc. 51, 185 (1895) [[ADS: 1895MmRAS..51..185D](#)], and *Second Index Catalogue of Nebulae Found in the Years 1895 to 1907; with Notes and Corrections to the New General Catalogue and to the Index Catalogue for 1888 to 1894*, Mem. Roy. Astron. Soc. 59, Part 2, 105 (1908) [[ADS: 1908MmRAS..59..105D](#)], both reprinted 1912 and 1953. Many IC objects had been discovered photographically.

Note: NGC, IC and Messier objects can be accessed interactively by the [SEDS Interactive NGC Online Catalog](#).

Less common general catalogs:

Bode:

Johann Elert Bode's "[Complete Catalog of Nebulous Stars and Star Clusters](#)", *Astronomisches Jahrbuch* for 1779, Berlin (1977). [Original catalog online](#).

Dun, Delta: [Dunlop](#)

James Dunlop's (1795-1848) historic catalog of southern deep sky objects. James Dunlop, 1828. A catalogue of nebulae and clusters of stars in the southern hemisphere, observed at Paramatta in New South Wales, by James Dunlop, Esq. *Philosophical Transactions of the Royal Society*, Vol. 118, pp. 113-151. Catalog of 629 positions of nebulous objects. Many of them were only badly determined, though.

[GC](#): General Catalogue

John Herschel's famous General Catalogue of nonstellar objects: Catalogue of Nebulae and Clusters of Stars. *Philosophical Transactions of the Royal Society* (London), Vol. 154 (1864), 1-137.

H: [\(William\) Herschel](#)

William Herschel's [catalog of 2500 deep sky objects](#), published in the *Philosophical Transactions of the Royal Society*: First catalog of 1,000 nebulous objects (1786), second catalog of a second 1,000 nebulous objects (1789), and third catalog of 500 nebulous objects. Classified in 8 subclasses, and numbered in the order of discovery for each subclass (e.g., [H I.215](#) or [H 1.215](#), [H II.909](#) or [H 2.909](#), [H VIII.88](#) or [H 8.88](#); older notations were like [H 215-I](#) or [H 215^I](#) or [I H 215](#)).

h: (John) Herschel

John Herschel's catalog, 2 parts 1833 (northern objects) and 1847 (southern): 1. Observations of Nebulae and Clusters of Stars, made at Slough, with a Twenty-foot Reflector, between the years 1825 and 1833. *Philosophical Transactions of the Royal Society*, Vol. 123, p. 359--505, 1833. 2307 objects. 2. *Results of Astronomical Observations made during the years 1834, 5, 6, 7, 8 at the Cape of Good Hope, being a completion of a telescopic survey of the whole surface of the visible heavens commenced in 1825*. Smith, Elder & Co., London. The 1713 entries in this catalog were numbered in continuation of John Herschel's 1833 catalog, and are normally referred as [h 2308 -- h 4021](#).

Lac: [Lacaille](#)

Abbe Nicholas Louis de la Caille (1713-62). Sur les etoiles nebuleuses du ciel Austral (*On the Nebulous Stars of the Southern Sky*). *Memoirs of the Royal Academy of Sciences in Paris*, 1755. The reprint version appended to Messier's catalog is [available online](#).

[Supernova Remnants](#)

G: Galactic Supernova Remnant

Galactic Supernova Remnants, from [A Catalogue of Galactic Supernova Remnants](#) (2000 August version), by David A. Green of Mullard Radio Astronomy Observatory, Cavendish Laboratory, Cambridge, UK.

[Planetary Nebulae](#)

PK: Perek-Kohoutek

Perek and Kohoutek. Catalog of Galactic Planetary Nebulae. Academia publishing house of the Czechoslovak Academy of Sciences, Prague, 1967, 276 pages. Compilation of all Planetary Nebulae known in the Milky Way Galaxy in 1964.

There is an [online version](#) of the second edition (2000)

Abell

George O. Abell, 1966. Properties of some old Planetary Nebulae. *Astrophysical Journal*, Vol. 144, p. 259 (April 1966) [[ADS: 1966ApJ...144..259A](#)]. Also Table II (Planetary Nebulae) in: George O. Abell, 1955. *Globular Clusters and Planetary Nebulae Discovered on the National Geographic Society-Palomar Observatory Sky Survey*. Publications of the Astronomical Society of the Pacific, Vol. 67, No. 397, p.258 (August 1955) [[ADS: 1955PASP...67..258A](#)] - Table 1 is the [Palomar Catalog](#) of globular clusters. [The Abell Planetary Nebulae](#), presented online by [Tom Polakis](#). Also note Jim Shields' [Best & Brightest Abell Planetaries](#) page.

ARO: Algonquin Radio Observatory

L.A. Higgs, 1971. *P.A.B.*, Vol. 1, No. 1, p. 1. [[ADS: 1971PAB.....1....1H](#)]. Dominion Observatory.

He2:

Karl G. Henize, 1967. Observations of Southern Planetary Nebulae. *Astrophysical Journal Supplement*, Vol. 14, p. 125. [[ADS: 1967ApJS...14..125H](#)].

A large number of more Planetary Nebulae catalogs is listed in the Appendix A of [S.J. Hynes, *Planetary Nebulae*](#) (1991), page 251-256.

Diffuse Nebulae

Ced: Cederblad

S. Cederblad, 1946. Catalog of Bright Diffuse Galactic Nebulae. Meddelanden fran Lunds Observatorium, Ser. 2, 12, No. 119.

DWB: Dickel, Wendker, Bieritz

H.R. Dickel, H.J. Wendker, J.H. Bieritz, 1969. The Cygnus X region. V. Catalogue and distances of optically visible HII regions. Astronomy and Astrophysics, Vol. 1, pp. 270-280. [[ADS: 1969A&A.....1..270D](#)]

GN: Galactic Nebula

Anonymous Galactic Nebula from the "Atlas of Galactic Nebulae" by T. Neckel and H. Vehrenberg

Gum

C.S. Gum. *A Survey of Southern H II Regions*. Memoirs of the RAS, 67:155 (1955) [[ADS: 1955MmRAS..67..155G](#)]

LBN: Lynds, Catalogue of Bright Nebulae

B.T. Lynds, 1965. Catalogue of Bright Nebulae. Astrophysical Journal Supplement Series, Vol. 12, p. 163 [[ADS: 1965ApJS...12..163L](#)]. Contains both emission and reflection nebulae. Normally quoted only if a "Sh2" or "vdB" number is missing.

Mi, M1: Minkowski

Rudolph Minkowski, 1946. New Emission Nebulae. Publications of the Astronomical Society of the Pacific, Vol. 58, p.305 [[ADS: 1946PASP...58..305M](#)].

RCW: Rodgers, Campbell, Whiteoak.

Rodgers, Campbell, Whiteoak, 1960. A Catalogue of H Alpha-Emission Regions in the Southern Milky Way. Monthly Notes of the Royal Astronomical Society, Vol. 121, No. 1, pp. 103-110 [[ADS: 1960MNRAS.121..103R](#)].

Sh2: Sharpless

S. Sharpless, 1959. A Catalogue of H II Regions. Astrophysical Journal Supplement Series, Vol. 4, p. 257. [[ADS: 1959ApJS....4..257S](#)]. Comprehensive catalog of galactic emission nebulae.

vdB: van den Bergh

S. van den Bergh, 1966. A Study of Reflection Nebulae. Astronomical Journal, Vol. 71, p. 990 [[ADS: 1966AJ.....71..990V](#)]. Comprehensive catalog of galactic reflection nebulae.

Dark Nebulae

B: Barnard

E.E. Barnard, 1927. *Catalogue of 349 Dark Objects in the Sky*. In *A Photographic Atlas of Selected Regions in the Milky Way*, Carnegie Institute, Washington, DC [[ADS: 1927Barn..C.....0B](#)]. First catalog of dark nebulae, created from photos. A preliminary version with 182 nebulae had appeared already in 1919:

E.E. Barnard, 1919. On the dark markings of the sky, with a catalogue of 182 such objects. *Astrophysical Journal*, Vol. 49, pp. 1-24 [[ADS: 1919ApJ....49....1B](#)].

LDN: Lynds, Catalogue of Dark Nebulae

B.T. Lynds. *Catalogue of Dark Nebulae*. *Astrophysical Journal Supplement Series*, 7:1 (1962) [[ADS: 1962ApJS....7....1L](#)]. Comprehensive catalog of galactic dark nebulae.

Open Clusters

A: Antalova

Av-Hunter: Aveni-Hunter

Aveni-Hunter, one open cluster

Bar, Bark: Barkhatova

Barkhatova, K.A., 1958. *Clusters in the region of the North America Nebula*. *Sov. Astron.*, 2, 410.

Bas: Basel

Basel astronomical institute. **Basel 1:** Grubissich, C., 1965. *Dreifarb-Photometrie von zwei offenen Sternhaufen in Richtung der Scutum-Wolke*. *Zeitschr. Astrophys.*, 60, 249-255. **Basel 2, 3:** Grubissich, C., 1965. *Dreifarb-Photometrie von zwei offenen Sternhaufen nahe NGC 7510*. *Zeitschr. Astrophys.*, 60, 256-263. **Basel 4:** Svolopoulos, S.N., 1965. *The two distant open clusters King 8 and An. Basel 4*. *Zeitschr. Astrophys.*, 61, 97-104. **Basel 5-20:** Becker, W. and Fenkart, R., 1971. *A catalogue of galactic star clusters observed in three colours*. *Astr. Astrophys. Suppl.* 4, 241-252. Originally 12 open clusters. The numbering has been continued up to 20, cluster 11 is divided into 2 clusters A and B.

Be: Berkeley

Lynga 1979, see C, gives 90 clusters numbered between 1 and 104. First published in the first edition of the *Catalogue of Star Clusters and Associations*, 1958.

Bi, Biur: Biurkan

Biurakan observatory. 13 clusters.

Blanco

Bo: Bochum

Cr: Collinder

Per Collinder (1890 - Dec 6, 1974), On structured properties of open galactic clusters and their spatial distribution. Lund Obs. Ann. No. 2 (1931) [[ADS: 1931AnLun...2....1C](#)]. Catalogue of 471 open clusters, identified on the Franklin-Adams charts, the NGC catalog, and the catalogs of Bailey, Melotte, Raab, Shapley, Trumpler, and others.

Cz: Czernik

Do: Dolidze

DoDz: Dolidze/Dzimselejsvili

Fr: Frolov

Graff

Graff 1 = IC 4756 (Graff's Cluster).

Grasdalen

Haf: Hafner

H: Harvard

Iskudarian

K: King

Ivan R. King. 27 open clusters. **King 1-21:** I.R. King, 1949. *Some New Galactic Clusters*. Harvard Bull., Vol. 919, p. 41-42. **King 22:** I.R. King, 1961. *A New Galactic Cluster*. PASP, Vol. 73, No. 431, p. 163-164 (April 1961). **King 23-27:** I.R. King, 1966. *Five New Open Clusters*. PASP, Vol. 78, No. 460, p. 81-82 (February 1966).

Latysev

I.N. Latysev. 2 open clusters. **Latysev 1:** I.N. Latysev, 1972. *Possibly Near-by Open Cluster*. Astron. Tsirk., Vol. 631, p. 2-4. **Latysev 2:** I.N. Latysev, 1977. *Possibly Near-by Open Cluster*. Astron. Tsirk., Vol. 969, p. 7-8.

Lund

G. Lynga, 1987. *Catalogue of Open Cluster Data*. Lund Observatory, Lund, Sweden.

Lynga

G. Lynga, 1964. Studies of the Milky Way from Centaurus to Norma. II. Open Clusters. Medd. Lunds Ser. II No. 140. 14 clusters (Lynga 1-14)

Mrk: Markarian

B.E. Markarian, 1951. *On the classification of open (galactic) stellar clusters. II. Preliminary list of open O-type star clusters.* Soob. Biurkan Obs. 9.

Mayer**Mel:** Melotte

Philibert Jacques Melotte (Jan 29, 1880 - Mar 30, 1961), 1915. A catalogue of star clusters shown on the Franklin-Adams chart plates. Memoirs of the Royal Astronomical Society, Vol. 60, Part V, pp. 175-186 and plates 16-17 [[ADS: 1915MmRAS..60..175M](#)]. Mel 1-245.

Pi: Pismis

Paris Pismis, *Nuevos cumulos estelares en regiones del sur*, Bol. Obs. Tonantz. Tacub., 2, part no 18, 37-38 (1959) [[ADS: 1959BOTT....2r..37P](#)]. Table 1: 24 open clusters (Pismis 1-24), Table 2: 2 globular clusters (numbered 1 and 2, but now Pismis 25-26).

Raab

S. Raab, 1922. *A reasearch on open clusters.* Lund Medd. Astron. Obs. Ser. II, No. 28 [[ADS: 1922MeLu2..28....1R](#)]

Ro: Roslund

Curt Roslund, *Remarks on Some New and Some Known Galactic Clusters.* Publications of the Astronomical Society of the Pacific, Vol. 72, No. 426, pp. 205-207 (06/1960) [[ADS: 1960PASP...72..205R](#)].

Ru: Ruprecht

J. Ruprecht, 1966. *Classification of open star clusters.* Bulletin of the Astronomical Institute of Czechoslovakia, Vol. 17, pp. 33-44 [[ADS: 1966BAICz..17...33R](#)]

St: Stephenson**St:** Stock

Jürgen Stock

Tom: Tombaugh

Clyde Tombaugh's Small List of Open Clusters. Tombaugh 1 and 2 are from: Tombaugh, C.W., 1938. Two new faint galactic star clusters. Publications of the Astronomical Society of the Pacific, Vol. 50, No. 295, p. 171 [[ADS: 1938PASP...50..171T](#)]. Tombaugh 3 to 5: Tombaugh, C.W., 1941. Three more new galactic star clusters. Publications of the Astronomical Society of the Pacific, Vol. 53, No. 314, p. 219 [[ADS: 1941PASP...53..219T](#)].

Tr: Trümpler

R.J. Trümpler, 1930. Preliminary results on the distances, dimensions and space distribution of open star clusters. Lick Obs. Bull. Vol XIV, No. 420 (1930), pp. 154-188 [[ADS: 1930LicOB.420..154T](#)].

Up: Upgren

vdB: van den Bergh-Waterloo

vdB-Ha: van den Bergh-Hagen, sometimes **BH**

Van den Bergh, S. and Hagen, G. L., 1975. Uniform survey of clusters in the Southern Milky Way. Astron. J., 80, 11-16 (1975) [[ADS: 1975AJ.....80...11V](#)]

[Globular Clusters](#)

Arp

Halton A. Arp. *Globular Clusters in the Galaxy*. In: *Galactic Structure*, ed. A. Blaauw, p. 401. Univ. of Chicago Press, 1965. [[ADS: 1965gast.book.....B](#)]

AM: Arp-Madore

Barry F. Madore and Halton C. Arp. 4 faint clusters, 1 open, 2 Milky Way globulars and 1 SMC cluster. AM 1-3: Three new faint star clusters. Astrophysical Journal, Vol. 227, p. L103-L104 and Plate L3-L6 (15 Jan 1979). [[ADS: 1979ApJ...227L.103M](#)] AM 4: A distant cluster in Hydra, AM-4. Publications of the Astronomical Society of the Pacific, Vol. 94, No. 2, pp. 40-42 (Feb 1982) [[ADS: 1982PASP...94...40M](#)]

BH: van den Bergh-Hagen

See open clusters, **vdB-Ha**. Two of these clusters actually are globular clusters: BH 176 and BH 229 (= HP 1).

Djorg:

S. Djorgovski. Discovery of three obscured globular clusters. Astrophysical Journal, Vol. 317, p. L13-L14 (06/1987) [[ADS: 1987ApJ...317L..13D](#)]. Djorg 3 is NGC 6540.

E:

A. Lauberts. Three distant stellar clusters found on ESO blue survey plates. *Astron. Astrophys.*, 52, 309-311 (10/1976) [[ADS: 1976A%26A....52..309L](#)]. E1 to E3. E1 is also AM 1, E2 an object of the LMC.

B.

ESO:

A. Lauberts. ESO/Uppsala survey of the ESO(B) atlas. Among the more than 18,000 objects are 85 globular clusters.

B.

HP: Haute Provence

5 globular clusters found at the Haute Provence Observatory. HP 1 is also BH 229 (vdB-Ha 229), HP 2,3,4,5 are also Terzan 1,2,4,6.

Pal: [Palomar](#) (from Adventures in Deep Space)

15 very faint globular clusters discovered within the POSS (Palomar Observatory Sky Survey). At least some are observable with large aperture amateur instruments, though. Pal 1-13 from Table I in: Abell G.O., 1955. *Globular Clusters and Planetary Nebulae Discovered on the National Geographic Society-Palomar Observatory Sky Survey*. Publications of the Astronomical Society of the Pacific, Vol. 67, No. 397, p.258 (August 1955) [[ADS: 1955PASP...67..258A](#)] - Table II is in the [Abell Catalog](#) of Planetary Nebulae. Added later: Pal 14 = Arp 1 = C 1608+150 (1960), Pal 15 = An. (Zwicky) = C 1657-004. Palomar 12 was once thought to be a nearby dwarf spheroidal galaxy ([Capricornus Dwarf](#)). The designation "Palomar" goes probably back to Helen Sawyer Hogg (1959).

Ter: [Terzan](#) (from Adventures in Deep Space)

11 globulars discovered by Agop Terzan (France) in the infrared; mostly heavily obscured and situated near the Galactic Center. Originally 12 entries, of which the original Terzan 11 was a rediscovery of Terzan 5; newer lists renumber the original Terzan 12 as Terzan 11. Terzan 7 and 8 are probably members of the [Sagittarius Dwarf Elliptical Galaxy](#). Mikkel Steine suggests that Terzan 3 and Terzan 6 and possibly Terzan 10 may be open clusters.

- [Barbara Wilson's Terzan globular cluster observations](#)

References:

Terzan 1: Un nouvel amas globulaire dans la region DU centre de la Voie lactee (A new globular cluster in the region of the center of the Milky Way). *C.R. Acad. Sci. Ser. B*, 263, 221-222 (1966) [[ADS: 1966CRB...263..221T](#)].

Terzan 2: un nouvel amas globulaire dans la region centrale de la Galaxie (a new globular cluster in the central region of the Galaxy). *C.R. Acad. Sci. Ser. B*, 265, 734-736 (1967) [[ADS: 1967CRB...265..734T](#)].

Terzan 3-8: Six nouveaux amas stellaires (Terzan 3-8) dans la region du centre de la Voie lactee et les constellations du Scorpion et du Sagittaire (Six new star clusters (Terzan 3-8) in the region of the center of the Milky Way and the constellations Scorpius and Sagittarius). *C.R. Acad. Sci. Ser. B*, 267, 1245-1248

(1968) [[ADS: 1968CRB...267.1245T](#)].

Terzan 9-12: Quatre nouveaux amas stellaires dans la direction de la region centrale de la Galaxie (Four new star clusters in the direction of the central region of the Galaxy). *Astr. Astrophys.* **12**:477-481 (1971) [[ADS: 1971A&A...12..477T](#)]

Ton: Tonantzintla

Two globulars found at the Tonantzintla observatory. Ton 1 is NGC 6380, Ton 2 is also Pismis 26.

UKS: UK Schmidt

Three globular clusters were cataloged under UKS designations, one of them, (UKS 1751-241) is frequently referenced as UKS-1, while UKS 1636-283 (ESO452-SC11) was sometimes referred to as UKS-2. A third reference, UKS 0923-545 is no more in the current list of Milky Way globular clusters. Reference for UKS-1: Malkan M., Kleinmann D.E., Apt J., Infrared studies of globular clusters near the Galactic Center. *ApJ.*, **237**, 432-437 (1980) [[ADS: 1980ApJ...237..432M](#)]

[Galaxies](#)

Arp

Halton Arp, *Atlas of Peculiar Galaxies*. Astrophysical Journal Supplement Series, 14:1 (1966) [[ADS: 1966ApJS...14....1A](#)], and California Institute of Technology (reprinted 1978) - now [available online \[unframed version\]](#). Also note [Dennis Webb's Arp Galaxies Webpages](#) and [our Messier Galaxies in the Arp Catalog](#) page.

AM: Arp-Madore

Halton C. Arp, Barry F. Madore. *A Catalogue of Southern Peculiar Galaxies and Associations: Positions and Descriptions* (Vol 1), *Selected Photographs* (Vol 2), Cambridge University Press. Thanks to Mike Smith of COMET/UCAR for providing this information.

DDO: David Dunlop Observatory

Sidney van den Bergh. Luminosity Classifications of Dwarf Galaxies. [Astronomical Journal](#), **71**:922-926 (1966)

GR: Gibson Reaves

Gibson Reaves. Dwarf Galaxies in the Virgo Cluster. [Astronomical Journal](#), **61**:69-75 (1956)

Holm: Holmberg

Nine galaxies, Holmberg I-IX. Holmberg I, II, III and IX are in M 81 region. Holmberg IV, V are in M 101 region. Holmberg I-V: Holmberg, Erik, 1950. A photometric study of nearby galaxies. [Lund Medd. Astron. Obs. Ser. II, 128, 1 \(1950\)](#). Holmberg VI-VIII: Holmberg, Erik, 1958. A photographic photometry of extragalactic nebulae. [Lund Medd. Astron. Obs. Ser. II, 136, 1 \(1958\)](#). Holmberg IX from later literature (RC2 quotes Ark.f.A., 5, No. 20, 1969). [Information on the nine Holmberg galaxies](#), Huachuca Astronomy Club (Deepsky 4) - includes SkyView images

Mrk: Markarian

B.E. Markarian, V.A Lipovetskii, J.A. Stepanian, L.K. Erastova, A.I. Shapovalova, Soobscheniya Spetsialnoi Astrofizicheskoi Observatorii 62, 5 (1989). Catalog of some 1515 Galaxies. [Available online](#) thanks to [Bill Keel](#) (University of Alabama)

MCG: Morphological Catalogue of Galaxies

Vorontsov-Velyaminov and Arhipova, Moscow State University, 1962-1968, 4 volumes. Contains 29,000 objects. Also referred to as VV.

PGC: Principal Galaxies Catalogue

G. Paturel, P. Fouque, L. Botinelli and L. Gougenheim of the Observatoire de Lyon, France, 1989 and 1995. An extragalactic database. I - The Catalogue of Principal Galaxies. [Astronomy and Astrophysics Supplement Series, vol. 80, no. 3, p. 299-315](#) (Nov 1989). Also: Catalogue of Principal Galaxies (PGC). [VizieR On-line Data Catalog, VII/119](#) - [online data](#).

UGC: Uppsala General Catalogue of Galaxies

P.N. Nilson, Uppsala, 1973. Contains 12921 objects.

UGC-A, UA: Catalogue of Selected Non-UGC Galaxies

P.N. Nilson, Uppsala, 1974.

VV: Vorontsov-Velyaminov

= MCG

1Z to 7Z: Zwicky

Fritz Zwicky's compact systems

Other important catalogs of galaxies, which are however not normally quoted, include

RC3: Third Reference Catalogue of Bright Galaxies

G. de Vaucouleurs, A. de Vaucouleurs, Corwin, Buta, Fouque, and Paturel; 1991.

Clusters of Galaxies

Abell

G.O. Abell. *The Distribution of Rich Clusters of Galaxies*. Astrophysical Journal Supplement Series, 3:211 (1958).

RCG: Catalogue of Rich Clusters of Galaxies

Abell, Corwin, Olowin; Centre de Donnees Stellaires, Strasbourg, France 1989.

Double and Multiple Stars

ADS: Aitken, New General Catalog of Double Stars

R.G. Aitken. *New General Catalogue of Double Stars Within 120 deg of the North Pole*. Washington, DC, 1932; Carnegie Inst.

Beta, BDS: Burnham

S.W. Burnham. *A General Catalogue of Double Stars Within 121 deg of the North Pole*. Washington, DC, 1906; Carnegie Inst.

Sigma: F.G.W. Struve

O Sigma: Otto Struve

Win, WNC, Winnecke.

The Winnecke Catalog of seven double stars, included in a paper of A. Winnecke (*Astronomische Nachrichten* No. 1738, vol 73, p 147-160, Feb 8, 1869).

Important only as it contains [M40](#). [Available online](#).