Catalog Search

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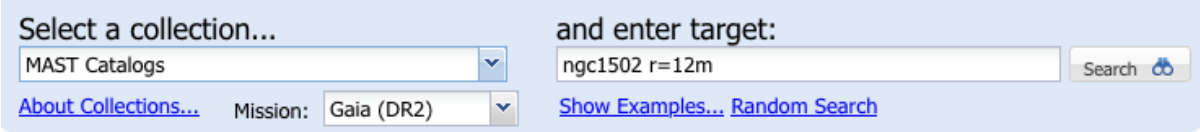
Catalog Cone Searches

Select catalogs may be searched near a target or position in the sky of interest: see MAST Data Collection Overview for the complete list. More complex searches with other catalog metadata requires other MAST tools: see Catalogs.MAST or MAST CasJobs.

The result of a catalog search is a table with sources that fall within a specified angular radius of a target or location (a ***cone*** in 3 dimensions). These entries may be filtered using values (or ranges of values) from any of the catalog fields. The filtered table entries may be cross-correlated with other astronomical catalogs (e.g., 2MASS), or written to a local file for further analysis.

An Example

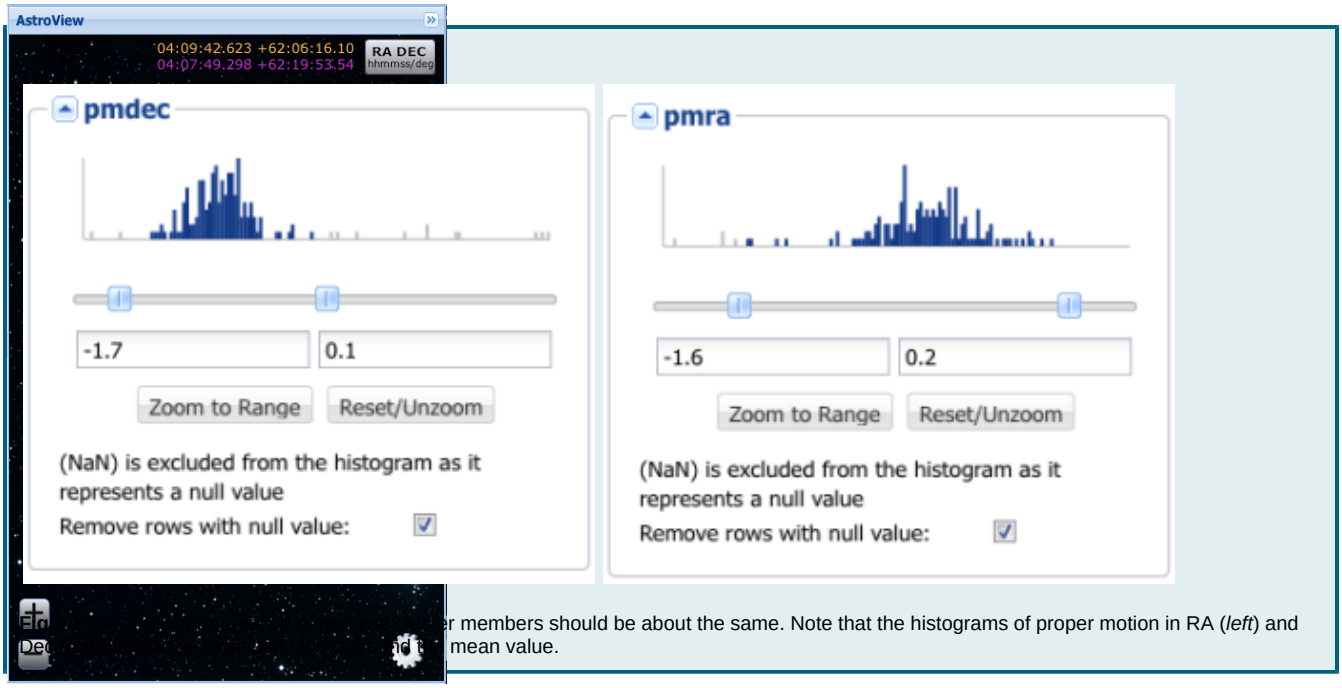
Consider a search in the direction of NGC1502, an open Galactic cluster about 1 kpc away, that is not well studied. A search of the GAIA DR2 catalog will help identify potential members of the cluster. A search radius of 12 arcmin will result in about 4760 catalog entries the core of the cluster.



Filter the Results

Select candidate cluster members by applying filters to the following columns. (See how to do this in the section Refining Results with Filters.) The ~160 remaining stars are marked in AstroView, as shown below.

Field Name	Value Range	Notes
parallax_over_error	> 1.	Only reasonably good quality parallaxes
parallax	0.8 < < 1.1	Limit the parallax (mas) to exclude foreground and background stars
phot_bp_mean_mag	< 20	Good quality photometry
phot_rp_mean_mag	< 20	
pmra	-1.6 < < 0.2	Select proper motion (mas/yr) near the cluster mean
pmdec	-1.7 < < 0.1	



r members should be about the same. Note that the histograms of proper motion in RA (*left*) and mean value.

Plotting Tool 

The plotting tool can be used to verify that most selected stars are candidates for cluster membership, as shown in Fig. 2. Further iteration on the selection criteria (region of the sky, parallax, proper motion) will refine the list of cluster candidates.

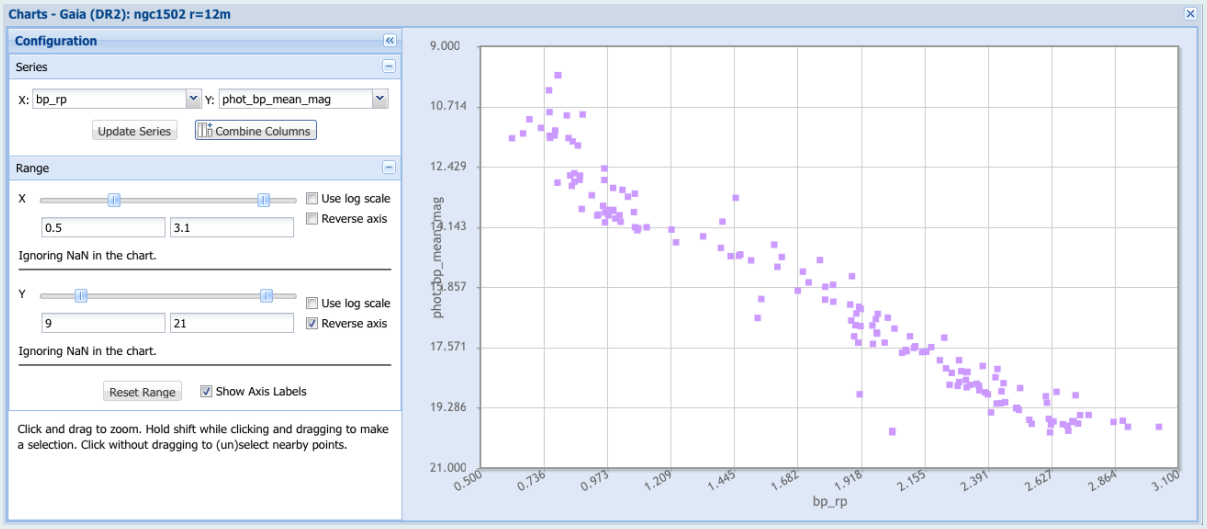


Figure 2 — A color-magnitude diagram of selected stars in the field of NGC1502 was created by plotting the GAIA ***bp*** field, plotted against the ***bp - rp*** color. The distinct main-sequence suggests that most stars may be cluster members.

Saving Results

Click the File Export button  to save the catalog subset to a local file. These selected catalog entries can be cross-matched to other catalogs (e. g., 2MASS) within the Portal, or exported for use in a radial velocity campaign to refine the cluster member candidates.

For Further Reading...

- Beyond the Portal
- MAST Data Collection Overview