Instructions for Using the LCDB Query Form

The LCDB Query Form allows you to return custom subsets of records from the Asteroid Lightcurve Database Summary Table by setting one or more filters and the appropriate range for the values for each filter. If your query returns one or more records, you can then select one of those records to see all other entries in the LCDB for the selected object.

The Asteroid Lightcurve Database (LCDB) and the values by which the search can be filtered are detailed in the paper by Warner et al., 2009, *Icarus* **202**, 134-146.

Setting Filters

Check the box for each filter that you want to include in the query and then set the entry fields for the filter as desired. If a box is not checked, the associated filter is not applied.

NOTE: **Filters are applied with a Boolean "AND", meaning that for a record to be returned, it must meet *all* the conditions set by the filters.**

The Number and Name filters are always applied. Use the default settings to assure that, barring any other filters, all records will be found.

Individual Filters

Number	Use the Range Low/High fields to restrict the records to numbered asteroid within that range.
	Set RangeLow = 0 to include un-numbered asteroids
Name	There are four possible filters

	Any	This option ignores the value in the entry field.
	Exact Match	The asteroid name must match the value in the entry field exactly; this includes capitalization and embedded spaces or other characters.
	Starts with	The name starts with the value in the entry field. For example, enter "Nik" (without the quotes) to find all entries where the name starts with those three letters. ***The search is case-sensitive***.
	Within	The value in the entry field is contained anywhere in the name. For example, entering "ere" (without the quotes) would find, among others, Ceres, Theres, Berenike, and so on. ***The search is case-sensitive***.

Diameter	The values for low and high are in kilometers. The validation code confirms that the Low value is less than the High value as well as that both entries are numeric, e.g., a Low value of F24?, would fail.

H	The values are the absolute magnitude (H) range, in magnitudes. The validation code confirms that the Low value is less than the High value as well as that both entries are numeric, e.g., a Low value of F24?, would fail.

Class   There are four possible filters. ***See additional information at the end of this discussion.***

Any	This option ignores the value in the entry field.
Exact Match	The taxonomic class entry must match the value in the entry field exactly; this includes capitalization.
Base + sub	This is the same as the "Starts with" filter for the name. Enter the base class in the field, e.g., C or S. For example, this option with "C" in the entry field (no quotes), might find, among others, C, Ch, etc.
Use List	Enter a comma-delimited list of classes in the entry field. The only allowed values are A-Z, a-z, and comma. The search uses a Boolean "OR" to look for a match. For example, if the value is "C,S,D" (without the quotes), the search will find records where the class is exactly C or S or D.

Inc assumed check box
If this box is not checked, the search finds only those records where the source of the classification is not "Assumed" (the CSource field = "A"; see the LCDB Icarus paper). In this case, the taxonomic class came from sources such as Tholen, SMASS, etc.

If the box is checked, then records where CSource = "A" are allowed. The assumed classes are based on a combination of orbital parameters and/or family/group membership. See the LCDB Icarus paper.

Family   There are three possible filters

Any	The search ignores the Family field values in the search.
Elements	The search cross-references with the MPC ORB file and filters records where semi-major axis, orbital eccentricity, and orbital inclination fall within the ranges set in the entry fields. The validation checks that all values are numeric and that Low values are less than High values.
Use List	The search filters the Family field to include only those items selected in the list. Use Click to select a single item. Use Ctrl+click to select multiple items one-at-time. To select multiple, contiguous items, Click on the first item and then Shift+click in the list.

Albedo (p_v)	Use the entry fields to limit albedo values. The search does not distinguish between values that are measured or derived from other parameters versus those that are assumed based on orbital elements and/or family/group membership.
	Validation checks that the values are numeric and within the range 0..1.0.
Period	There are three possible return values in addition to limiting the period to a range (in hours). ***See the important note at the end of this discussion.***

Show Period	The results show the period, in hours.
Show Frequency	The search returns 24.0/Period, i.e., the number of rotations per day. If this option is selected, a restriction that the period is > 0 is included
Show Both	The period and frequency are included in the results.

The entry field values are always used to filter the search. The validation checks that they are numeric and that Low is less than High.

Note: Not all records have a period value. There are some that have only a description in the PDESCRIP field, e.g,. "long". If you apply the period filter and choose to include the frequency in the output, those records will be excluded since the PERIOD value = 0.

AmpMax	The search is filtered by the AmpMax field. Validation checks that the values are numeric and that Low is less than High.
	The table includes an AmpMin field. This is not examined as part of the filter. See the LCDB Icarus paper.
U Quality	See the LCDB Icarus paper for the definition of the U rating system. In short, it ranges from 1 ("most likely wrong") to 3 ("secure, unambiguous").

There are four possible filters

Any	The search ignores the value in the drop down list.
= Value	Only those records where U matches the value in the drop down list are included.
>= Value	The value in the record must be greater than or equal to the value in the drop down list.
<= Value	The value in the record must be less than or equal to the value in the drop down list.

Note: Only those lightcurves with U = 2- or greater, i.e,. 2-, 2, 2+, etc., are considered "statistically valid" for use in rotation studies.

Tumbler Flag	There are two possible filters	
	Include Flagged	The search returns only those records where the NOTES field includes "T" (without the quotes).
	Exclude Flagged	The search excludes any record where the NOTES field includes "T" (without the quotes).

The "T" flag, which can be supplemented with other characters, e.g., T?, indicates that the object is or may be in non-principal axis rotation. See the LCDB Icarus paper.

Combining this filter with the "Binary Flag" would almost certainly return 0 records. Since there are no known tumbling asteroids with satellites.

Binary Flag	There are two possible filters	
	Include Flagged	The search returns only those records where the BINARY field is not empty (NULL).
	Exclude Flagged	The search excludes any record where the BINARY field includes any entry (<> NULL).

The Binary flag, if not NULL, indicates that the object may be or is a binary or even a multiple system. See the LCDB Icarus paper.

Combining this filter with the "Tumbler Flag" would almost certainly return 0 records. Since there are no known tumbling asteroids with satellites.

Max Rows	Default = 50.

This sets the maximum number of records to be returned.
Use "No Limit" wisely! Otherwise, hundred, even thousands of records might be returned.