

Clearing the Dusty Filing Cabinets

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[**http://www.minorplanetcenter.net/light_curve\(.php\)**](http://www.minorplanetcenter.net/light_curve(.php))



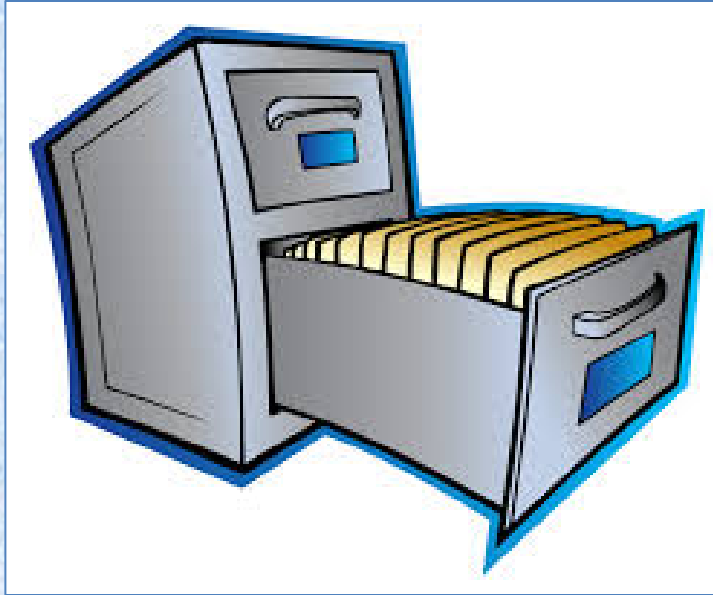
Clearing the Dusty Filing Cabinets



Some of the Issues

- Today's "dusty filing cabinet"
 - Hard drives, floppies
 - Web sites
 - *Paper!*
- Lack of widely-accepted standard format
- No central repository

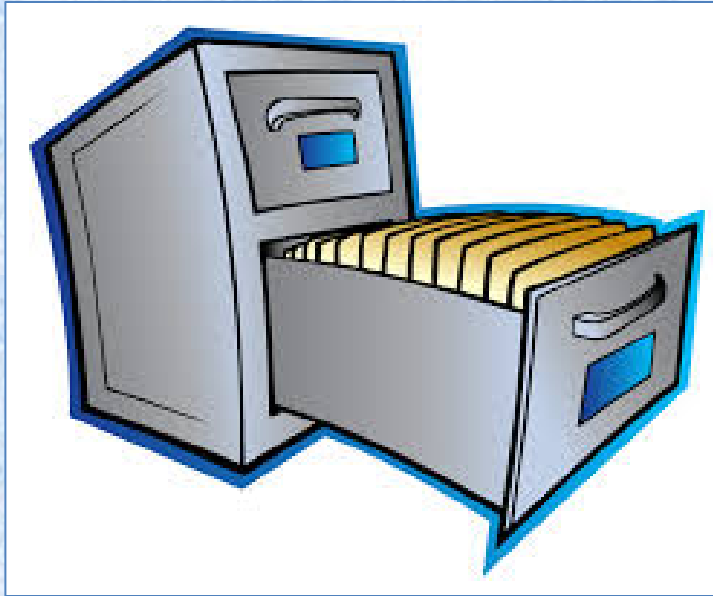
Clearing the Dusty Filing Cabinets



Why Raw Data?

- Independent confirmation
- **Determine other physical characteristics**
 - **Shape and/or spin axis modeling**
 - **H-G parameters**
 - **Search for overlooked signs of satellites or tumbling**
- Historical archive
("The beer truck intervention")

Clearing the Dusty Filing Cabinets



Why Yet Another?

- Existing sites too difficult or time-consuming to submit data or inactive
- Excessive data formatting requirements
- Formatting for one site not necessarily compatible with other sites or software
- Lightcurve-by-lightcurve metadata

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NASA PDS - OLAF

- Data must be in standard ASCII (with no ASCII extension characters).
- Filenames are limited to 30 characters including the extension, which must be .tab.
- Filenames cannot be mixed-case. (OLAF will convert to lower case.)
- No Tab characters are allowed.
- You may have either two or three columns: time, quantity measured, and optionally a column for uncertainty/error.
- Julian Dates are greatly preferred over Modified Julian Dates.
- Columns must be delimited by a single space. (Spaces included in the format definition for the columns don't count.)
- Each line must be the same number of bytes long, and each column within the line must have the same width (in bytes) for each row. Spaces should be used to pad the columns and rows to this requirement.
- Decimal numbers must be aligned on the decimal point.
- Integers must be right-aligned.
- No blank lines may exist in the file.
- Columns may not have blank entries. Entries for which there is no data are to be filled with a "null value" such as - for character fields, 0 for integer fields, or -999.99999 (chosen to match the format of the field) for real fields. Choose a null value which is outside the range of valid values for the field.



Clearing the Dusty Filing Cabinets

NASA PDS - OLAF

Select or Create a Data Set

A Data Set is a collection of related data containing data products such as images or tables along with the information about the data set.

Upload to existing data sets:


- Asteroid Lightcurves from Palmer Divide Observatory V1.0 [\[Contents\]](#)

[Add or Modify Data Products](#) - Access your data set to add or modify data

[Modify Data Set Info](#) - Change the information you entered about this data set such as the abstract and description

[Delete Data Set](#) - Delete the data set and all data in it


Create new data set:

Already have a data set catalog file? Then [upload the catalog file](#). 

Fields marked with a * are required.

Data reduction level (CODMAC) *

If multiple levels, choose the highest or most predominant one.

-- Select a Value -- 

Data Set Title (Name) * (55 characters maximum) Version Number *

Citation Level *

Generate citations for data set and individual data files:

Generate citations for data set only:


Data Availability *

Do you want your data to be immediately available to the public before it is reviewed?

Yes:

No:


Primary Target Type of Data Set *

ASTEROID 


Author/Editor Code  * - [Look-up or define new Author/Editor Codes](#)

Reference Codes  * - [Look-up or define new Reference Codes](#)

R0000

Data Set Abstract  * - Approximately a paragraph, analogous to a journal abstract, to be sent to services such as ADS

Data Set Description  * - Approximately a page or two providing a full and complete description of the data set. See the help page for guidelines and examples

Confidence Level Notes  * (Problems, Uncertainties)

[Create New Data Set](#)

ALCDEF

Asteroid Lightcurve Data Exchange Format

- Introduced at DPS 2010 (Stephens *et al.*, 2010)
- “FITS-like” Formatting
 - <keyword> = <value>
- “Lightcurve Blocks”
 - Metadata (Header)
 - CompStars (Header 2 – optional)
 - Lightcurve data (Data)
- Multiple LC blocks and/or objects in a single file
- Flexible data formatting
- Data checks on-the-fly (redundant/contradictory)

ALCDEF

Asteroid Lightcurve Data Exchange Format

Reserved Keywords

BIBCODE	CONTACTNAME	MAGBAND	PHASE
CIBAND	DATA	MPCDESIG	PUBLICATION
CICORRECTION	DELIMITER	OBJECTDEC	REDUCEDMAGS
CITARGET	DIFFERMAGS	OBJECTNAME	REVISEDATA
COMMENT	ENDDATA	OBJECTNUMBER	SESSIONDATE
COMPCCI{X}	ENDMETADATA	OBJECTRA	SESSIONTIME
COMPDEC{X}	FILTER	OBSERVERS	STANDARD
COMPNAME{X}	LTCAPP	OBSLATITUDE	STARTMETADATA
COMPMAG{X}	LTCDDAYS	OBSLONGITUDE	UCORMAG
COMPRA{X}	LTCTYPE	PABB	
CONTACTINFO	MAGADJUST	PABL	

ALCDEF

Asteroid Lightcurve Data Exchange Format

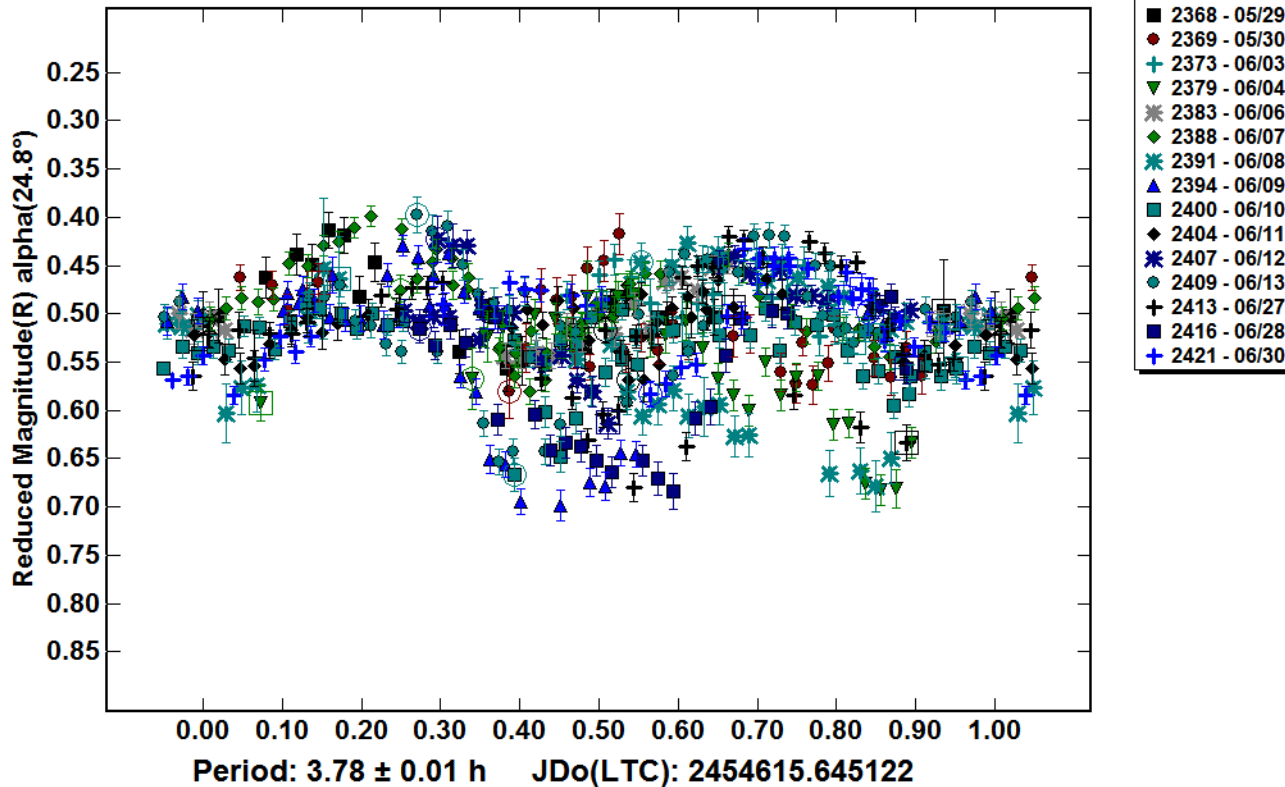
Data Checks (Vetting)

- **Redundant Data**
 - Are contact, object, date/time, filter the same?
- **Consistent Data**
 - Do Number, Name, and/or Designation agree?
- **Cross-checking Data**
 - If data are light-time corrected, is the correction value non-zero?

ALCDEF

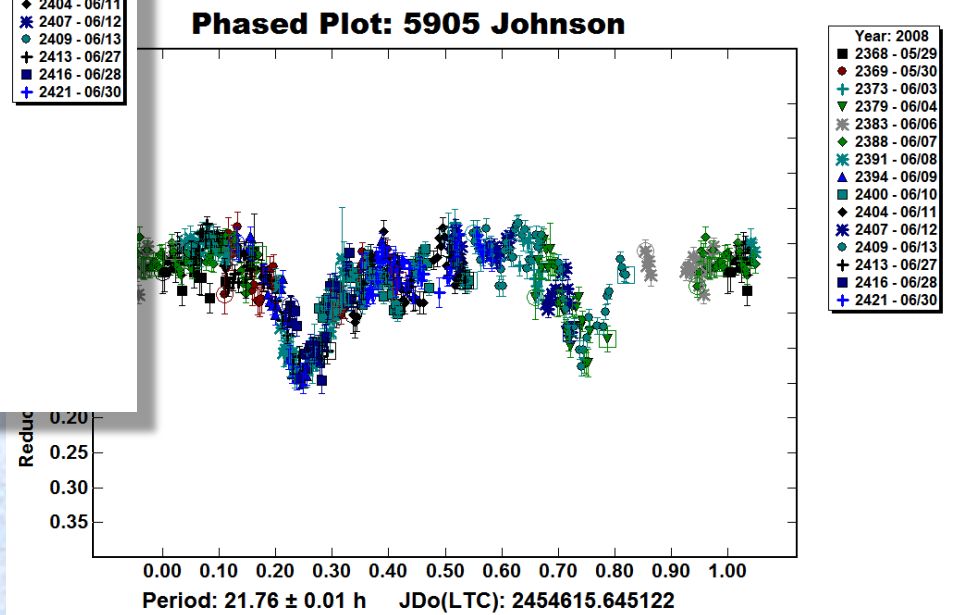
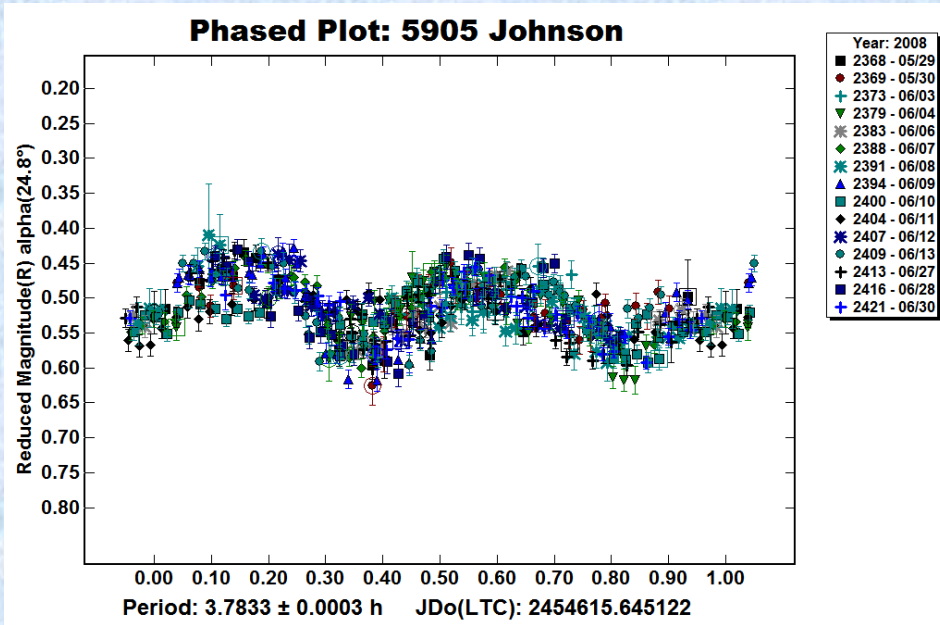
Asteroid Lightcurve Data Exchange Format

Phased Plot: 5905 Johnson



ALCDEF

Asteroid Lightcurve Data Exchange Format



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ALCDEF

Asteroid Lightcurve Data Exchange Format

- **New Web Site**

Objects	LC Blocks	Observations
2645	22408	1770312

2014 Nov 4

- **Closely modeled after existing site**
 - **In beta testing**
 - **Will migrate to MPC site before end of year**
- **Integration with New MPC Physical Parameters Pages**
 - **Include Asteroid Lightcurve Database (LCDB)**

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ALCDEF

Asteroid Lightcurve Data Exchange Format

Moving Ahead

- **Broader Acceptance**
 - Support in popular photometry programs
 - Adoption of ALCDEF format by professional community
 - Review/expansion of keywords
 - Migration of MPC data to PDS via pipeline (resubmission not required)

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Thanks!

Minor Planet Center

- Tim Spahr
- José Luis Galache
- Michael Rudenko

Beta Testers and Major Contributors

Observer	Objects	Obs
• Brian D. Warner	1,127	475,186
• Robert D. Stephens	409	284,037
• Daniel A. Klinglesmith	61	25,098
• Frederick Pilcher	187	491,733

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