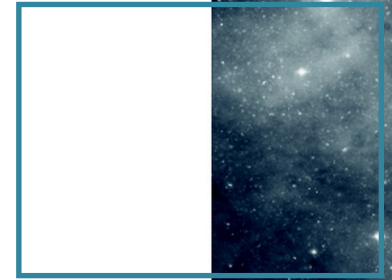
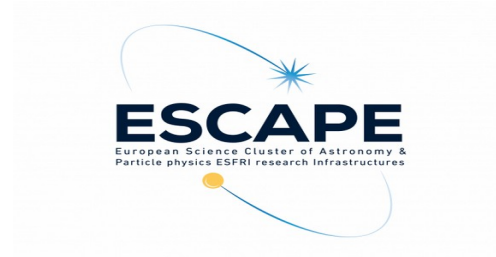


Yaml serialisation of a « Mango DM » view on an asteroid catalog






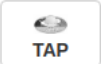
-
- François Bonnarel, Mireille Louys, Laurent Michel, Gilles Landais





VizieR use case : Photometry of 3 main belt asteroids

- The catalog is a set of 5 tables
 - } Asteroid fundamental parameters
 - } 3 light curves
 - } 1 aspect table

Photometry of 3 main belt asteroids : J/A+A/498/313

Access to    





Authors : Marciniak A. , Michalowski T., Hirsch R. et..al

VizieR DOI : [10.26093/cds/vizieR.34980313](https://doi.org/10.26093/cds/vizieR.34980313)   Cite

Bibcode : 2009A&A...498..313M (ADS)

CDS Keywords : Minor planets ; Photometry

Observation (OC)
Inserted into VizieR : 30-Apr-2009
Last modification : 26-Jun-2017

Article Origin    

Photometry and models of selected main belt asteroids. VI. 160 Una, 747 Winchester, and 849 Ara. (2009)
[Go to the original article \(10.1051/0004-6361/200811078\)](https://doi.org/10.1051/0004-6361/200811078)

Keywords : techniques photometric - minor planets: asteroids

Abstract: We present a set of new photometric observations of three main belt asteroids: 160 Una, 747 Winchester, and 849 Ara. This, combined with the available data, allowed us to construct their physical models. The lightcurve inversion method was used to obtain their spins and shapes. We have resolved problems with the rotation period of 160 Una, and found it to be 11.033176 ± 0.000011 h, almost twice the value given in the literature.

Asteroid fundamental parameters joint with asteroid « aspects »

Ast	Name	H mag	Diam km	i deg	e	a AU	FileName	Orb	LC	Name	Obs s	r AU	delta AU	phAngle deg	Elon deg	Elat deg	Site
160	Una	9.08	81.2	3.823835	0.06490120	2.72908023	160lcs.dat	Orb	LC	Una	2000-09-25T02	2.5936	1.6284	7.60	22.25	0.60	Bor
160	Una	9.08	81.2	3.823835	0.06490120	2.72908023	160lcs.dat	Orb	LC	Una	2000-09-27T21	2.5922	1.6160	6.34	21.68	0.68	Bor
160	Una	9.08	81.2	3.823835	0.06490120	2.72908023	160lcs.dat	Orb	LC	Una	2000-09-30T02	2.5911	1.6081	5.38	21.24	0.74	Bor
160	Una	9.08	81.2	3.823835	0.06490120	2.72908023	160lcs.dat	Orb	LC	Una	2001-12-14T04	2.6383	2.0184	19.08	143.31	4.52	Bor
160	Una	9.08	81.2	3.823835	0.06490120	2.72908023	160lcs.dat	Orb	LC	Una	2002-02-03T00	2.6722	1.6897	2.11	137.09	4.83	Bor
160	Una	9.08	81.2	3.823835	0.06490120	2.72908023	160lcs.dat	Orb	LC	Una	2002-02-04T00	2.6729	1.6896	1.90	136.84	4.82	Bor
160	Una	9.08	81.2	3.823835	0.06490120	2.72908023	160lcs.dat	Orb	LC	Una	2002-02-05T02	2.6736	1.6898	1.78	136.60	4.81	Bor
160	Una	9.08	81.2	3.823835	0.06490120	2.72908023	160lcs.dat	Orb	LC	Una	2005-10-05T02	2.5443	2.0534	21.98	84.11	3.80	Bor
160	Una	9.08	81.2	3.823835	0.06490120	2.72908023	160lcs.dat	Orb	LC	Una	2005-10-07T02	2.5444	2.0292	21.73	84.37	3.87	Bor
160	Una	9.08	81.2	3.823835	0.06490120	2.72908023	160lcs.dat	Orb	LC	Una	2005-10-09T00	2.5444	2.0066	21.47	84.59	3.93	Bor
160	Una	9.08	81.2	3.823835	0.06490120	2.72908023	160lcs.dat	Orb	LC	Una	2005-10-19T02	2.5451	1.8925	19.75	85.37	4.30	Bor
160	Una	9.08	81.2	3.823835	0.06490120	2.72908023	160lcs.dat	Orb	LC	Una	2007-03-26T02	2.8284	1.8311	0.35	185.96	0.34	Bor
160	Una	9.08	81.2	3.823835	0.06490120	2.72908023	160lcs.dat	Orb	LC	Una	2007-04-15T21	2.8397	1.8936	8.25	181.58	-0.09	Bor
160	Una	9.08	81.2	3.823835	0.06490120	2.72908023	160lcs.dat	Orb	LC	Una	2007-04-25T21	2.8449	1.9636	11.77	180.06	-0.28	Bor
160	Una	9.08	81.2	3.823835	0.06490120	2.72908023	160lcs.dat	Orb	LC	Una	2008-06-05T02	2.8786	1.9260	8.52	279.07	-5.66	SAAO
160	Una	9.08	81.2	3.823835	0.06490120	2.72908023	160lcs.dat	Orb	LC	Una	2008-06-07T00	2.8780	1.9154	7.86	278.75	-5.70	SAAO
160	Una	9.08	81.2	3.823835	0.06490120	2.72908023	160lcs.dat	Orb	LC	Una	2008-06-15T02	2.8749	1.8789	4.93	277.20	-5.82	SAAO
747	Winchester	7.69	171.7	18.178812	0.34230929	2.99789444	747lcs.dat	Orb	LC	Winchester	2002-02-22T02	3.8643	3.3340	13.36	215.98	20.21	Bor
747	Winchester	7.69	171.7	18.178812	0.34230929	2.99789444	747lcs.dat	Orb	LC	Winchester	2002-03-09T02	3.8849	3.1765	11.37	215.12	21.59	Bor
747	Winchester	7.69	171.7	18.178812	0.34230929	2.99789444	747lcs.dat	Orb	LC	Winchester	2002-03-11T02	3.8875	3.1584	11.05	214.93	21.73	Bor
747	Winchester	7.69	171.7	18.178812	0.34230929	2.99789444	747lcs.dat	Orb	LC	Winchester	2002-03-18T02	3.8965	3.1012	9.88	214.09	22.29	Bor



Photometric measurements (+ positions relative to Earth and Sun)

<u>Full</u>	<u>JD</u> <u>d</u>	<u>br</u>	<u>Sx</u> <u>AU</u>	<u>Sy</u> <u>AU</u>	<u>Sz</u> <u>AU</u>	<u>Ex</u> <u>AU</u>	<u>Ey</u> <u>AU</u>	<u>Ez</u> <u>AU</u>
<u>1</u>	2445254.691110	1.0218	-2.411595	-0.916291	-0.034912	-1.467316	-0.593324	-0.034899
<u>2</u>	2445254.708700	1.0115	-2.411595	-0.916291	-0.034912	-1.467316	-0.593324	-0.034899
<u>3</u>	2445254.791400	1.0115	-2.411595	-0.916291	-0.034912	-1.467316	-0.593324	-0.034899
<u>4</u>	2445254.895800	0.9633	-2.411595	-0.916291	-0.034912	-1.467316	-0.593324	-0.034899
<u>5</u>	2445254.904910	0.9921	-2.411595	-0.916291	-0.034912	-1.467316	-0.593324	-0.034899
<u>6</u>	2445255.651660	1.0002	-2.407252	-0.926368	-0.035626	-1.468958	-0.587229	-0.035612
<u>7</u>	2445255.719150	1.0179	-2.407252	-0.926368	-0.035626	-1.468958	-0.587229	-0.035612
<u>8</u>	2445255.752400	0.9430	-2.407252	-0.926368	-0.035626	-1.468958	-0.587229	-0.035612
<u>9</u>	2445255.847510	1.0302	-2.407252	-0.926368	-0.035626	-1.468958	-0.587229	-0.035612
<u>10</u>	2445255.888460	1.0021	-2.407252	-0.926368	-0.035626	-1.468958	-0.587229	-0.035612
<u>11</u>	2445255.926410	1.0095	-2.407252	-0.926368	-0.035626	-1.468958	-0.587229	-0.035612
<u>12</u>	2445255.956850	1.0151	-2.407252	-0.926368	-0.035626	-1.468958	-0.587229	-0.035612
<u>13</u>	2445255.976150	0.9820	-2.407252	-0.926368	-0.035626	-1.468958	-0.587229	-0.035612
<u>14</u>	2445256.653750	1.0134	-2.402868	-0.936429	-0.036339	-1.470839	-0.581219	-0.036324
<u>15</u>	2445256.684980	0.9537	-2.402868	-0.936429	-0.036339	-1.470839	-0.581219	-0.036324
<u>16</u>	2445256.726070	0.9669	-2.402868	-0.936429	-0.036339	-1.470839	-0.581219	-0.036324
<u>17</u>	2445256.756180	1.0209	-2.402868	-0.936429	-0.036339	-1.470839	-0.581219	-0.036324
<u>18</u>	2445256.817620	1.0116	-2.402868	-0.936429	-0.036339	-1.470839	-0.581219	-0.036324
<u>19</u>	2445256.854430	1.0447	-2.402868	-0.936429	-0.036339	-1.470839	-0.581219	-0.036324
<u>20</u>	2445256.891760	1.0060	-2.402868	-0.936429	-0.036339	-1.470839	-0.581219	-0.036324
<u>21</u>	2445256.930330	0.9822	-2.402868	-0.936429	-0.036339	-1.470839	-0.581219	-0.036324
<u>22</u>	2445256.963730	1.0005	-2.402868	-0.936429	-0.036339	-1.470839	-0.581219	-0.036324
<u>23</u>	2448533.379405	1.0268	-2.461893	-0.803487	-0.027106	-1.477850	-0.622902	-0.027101

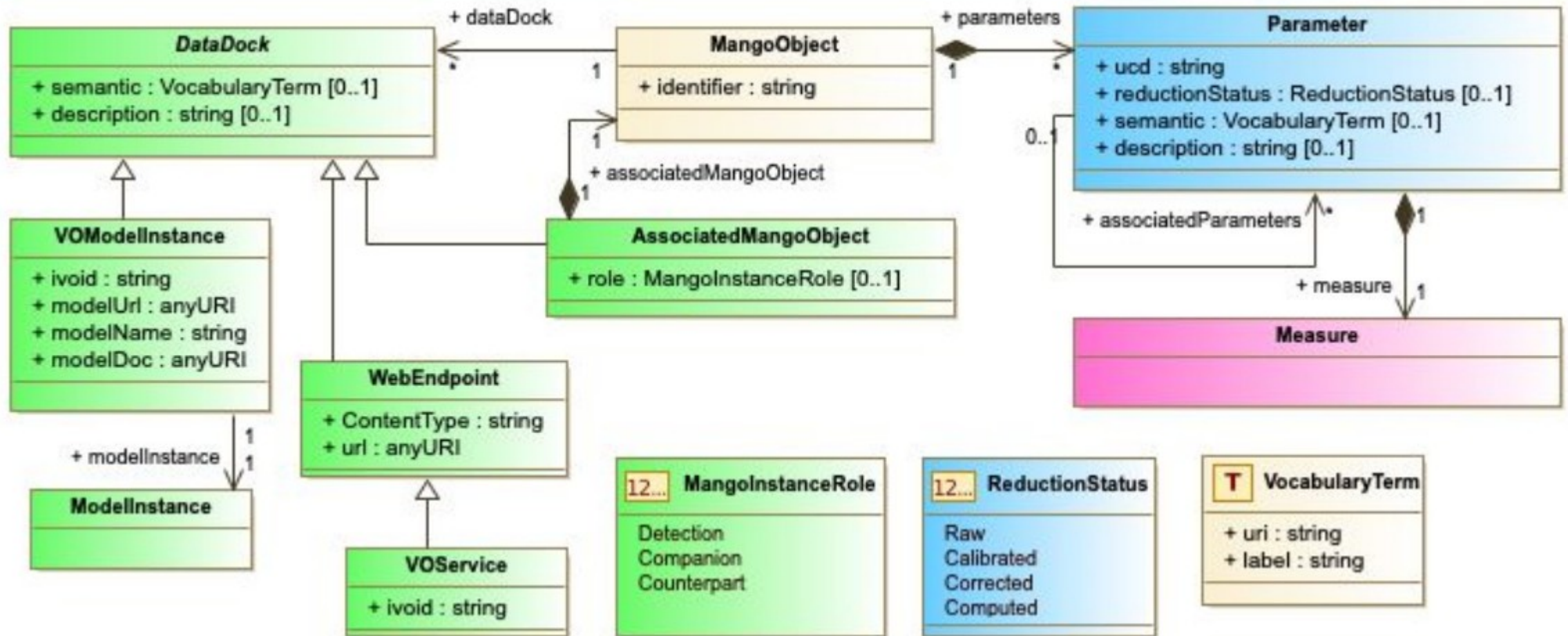


Mapping « mango » DM on top of these tables. Why ?

- Low level : reuse MCT and PhotDM . Easily gathers
 - Measurements, errors
 - Coordinates
 - Coordinate systems
- High level :
 - Separate fundamental parameters and time variable parameters (=timeseries) within the same overall instance
- What is « mango » ? : see next slide

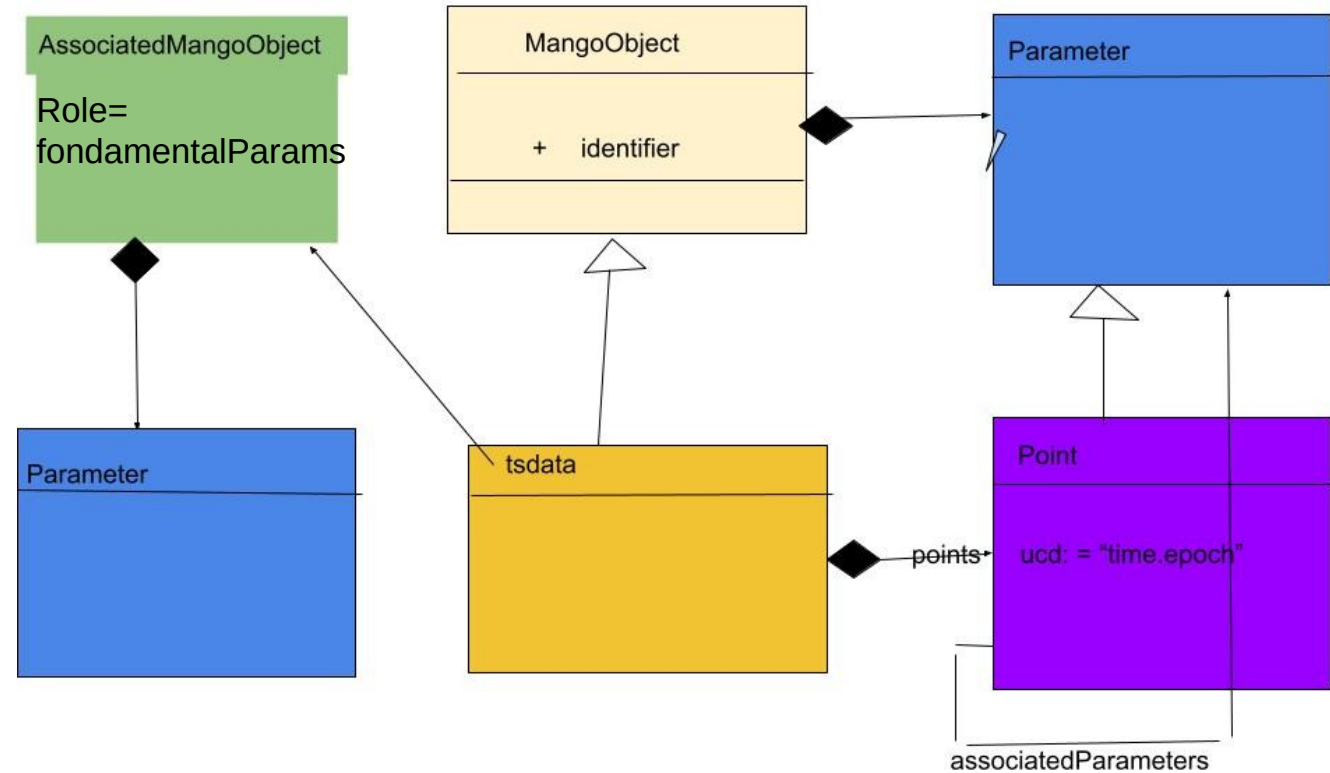


What is mango ?



Mango extension for TimeSeries

- **Tsdata** =
« TimeSeries data »
extends mangoObject
and forces composition
with **Point**
- **Point** extends
Parameter and forces
time.epoch ucd and
presence of
associatedParameters



Yaml serialisation of mango view of photometric measurements tables

- Tsdata instance :
 - Composes « Points » each made of an independant Time Parameter object which associates other Parameters : brightness, x,y,z distances to earth and sun
 - Also contains an intance of associatedMangoObject which gathers fundamental source Parameters (mean brightness, orbit parameters)
- [Look at the yaml file](#)



Yaml serialisation

How and Why ?

- Proposed datamodel annotation of VOTable should make possible to transform VOTables into Yaml files
- (parsing XML → model objects in memory → save in yaml)
- Yaml is :
 - human readable
 - Python code can easily manage and make use of the mango objects :
 - plots
 - combined/computed columns
 -

