

# □ Discovery and Access

- Data Discovery: 3 ways
  - **Source driven:** TAP or SCS → URL → How do we put a standard tag on this URL? Utype, Link, DataLink (Service descriptor or resource) ?
  - **ObsCore driven:** do we need to add more fields?
  - **Physical content driven:** how do we describe which metadata? joint ObsCore + physical\_metadata\_table
- TimeSeries representation and access:
  - Looks like there is a consensus! Time needs to be properly described: Time Scale, ref. position, representation (JD, MJD, Offset, no HJD)
  - Data Model (tomorrow)
  - Single URL retrieval not enough: SODA-like to generate the actual TimeSeries

“SODA is a low-level data access capability or server side data processing that can act upon the data files, performing various kinds of operations: filtering/subsection, transformations, pixel operations, and applying functions to the data.”

# □ DAL as a possible solution

- Obscore:
  - Characterisation of time from TimeSeries DM
  - Set a new TimeSeries extension table
    - **Endorsed note or real standard?**
- Representation:
  - Requires modelling and serialisation (DM task)
- TimeSeries generation:
  - Add a *DataProductType* attribute to SODA for TimeSeries
  - Add resampling parameters to SODA interface
  - **Endorsed note or new version of standard?**
- SIAV2 (param-based) discovery:
  - Obscore-like attributes in the SIAV2 query params
  - Virtual data discovery capability
  - **Endorsed note or new version of standard?**

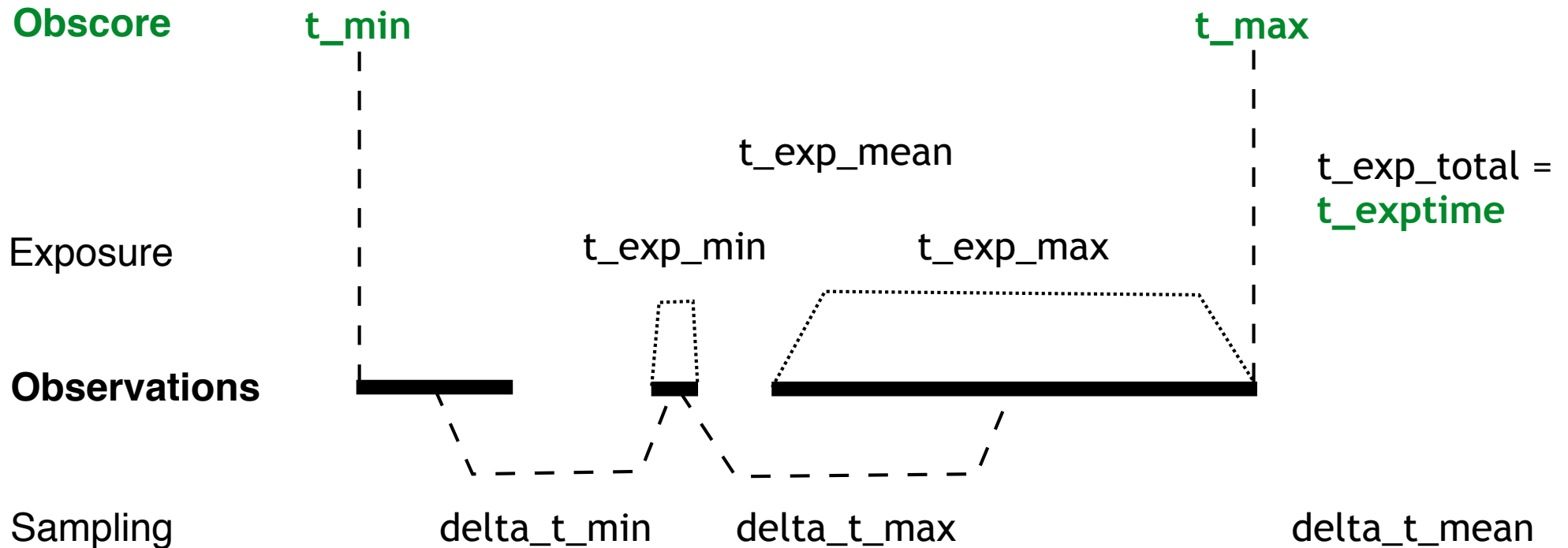
# ☐ Metadata needed? for discovery

- **Spatial coordinate system** ✓
- **Time coordinate system** (scale, ref.position, representation) MJD but not associated to a fixed ref nor scale) ✗
- **Time, spectral, space and polarisation characterisation and statistics**
  - Raw/mean position
  - **raw bounding limits** ( $t_{\min}$ ,  $t_{\max}$ )
  - standard deviation
- **Time sampling characterisation and statistics:**
  - Mean sampling step,
  - Sampling step limits,
  - sampling step standard deviation,
  - **total exposure time**
- **Exposure time**
  - Mean total exposure time ( $t_{\text{exptime}}$ )
  - mean exposure time per step
  - min, max and standard deviation of exposure time per step
- **Characterisation on the time frequency axis:**
  - Periodograms are another representation of data
  - We can have period(s) for periodic data or variability
  - We can proceed to frequency analysis and provide coefficient and frequencies
  - Phase representation
- **Questions:** What are the dependent and independent quantities? what is the nature of the dependant quantities?

|                   |          |         |  |
|-------------------|----------|---------|--|
| obs_collection    | unitless | String  | Name of the data collection                                      |
| obs_id            | unitless | String  | Observation ID   |
| obs_publisher_did | unitless | String  | Dataset identifier given by the publisher                        |
| access_url        | unitless | String  | URL used to access (download) dataset                            |
| access_format     | unitless | String  | File content format (see in App. BB.5.2)                         |
| access_estsize    | kbyte    | integer | Estimated size of dataset in kilo bytes                          |
| target_name       | unitless | String  | Astronomical object observed, if any                             |
| s_ra              | deg      | double  | Central right ascension, ICRS                                    |
| s_dec             | deg      | double  | Central declination, ICRS  |
| s_fov             | deg      | double  | Diameter (bounds) of the covered region                          |
| s_region          | unitless | String  | Sky region covered by the data product (expressed in ICRS frame) |
| s_xel1            | unitless | integer | Number of elements along the first spatial axis                  |
| s_xel2            | unitless | integer | Number of elements along the second spatial axis                 |
| s_resolution      | arcsec   | double  | Spatial resolution of data as FWHM                               |
| t_min             | d        | double  | Start time in MJD  |
| t_max             | d        | double  | Stop time in MJD   |
| t_exptime         | s        | double  | Total exposure time  |
| t_resolution      | s        | double  | Temporal resolution FWHM   |
| t_xel             | unitless | integer | Number of elements along the time axis                           |
| em_min            | m        | double  | Start in spectral coordinates                                    |
| em_max            | m        | double  | Stop in spectral coordinates                                     |
| em_res_power      | unitless | double  | Spectral resolving power   |
| em_xel            | unitless | integer | Number of elements along the spectral axis                       |
| o_ucd             | unitless | String  | UCD of observable (e.g. phot.flux.density, phot.count, etc.)     |
| pol_states        | unitless | String  | List of polarization states or NULL if not applicable            |
| pol_xel           | unitless | integer | Number of polarization samples                                   |
| facility_name     | unitless | String  | Name of the facility used for this observation                   |
| instrument_name   | unitless | String  | Name of the instrument used for this observation                 |

**Table 1.** Mandatory fields of the Observation Core Components data model with their name, recommended units, data type and designation.

# □ What do we have/need in Obscore for discovering time series data?



Number of observations  $t_{xel}$

Time resolution (precision of the measurement)  $t_{resolution}$

What kind of observations do I have? **photometry (light curves)**, spectra, images,...



# □ Extension of Obscore?

Do we need an Obscore extension for TimeSeries?

Are t\_min, t\_max, t\_exptime, t\_resolution, t\_xel enough?

- Do we need a **unique and standard** extension/modification?
  - Where do we put the limit to the fields we would like to add?
    - Properly defined time is a must — **Must** refer to A. Rots mail, A&A paper and STC2 doc
    - Add information on sampling? **Maybe**
    - Add information on exposure time? **Maybe**
    - Add what is varying with time? **Extend o\_ucd value domain**
    - Physical properties — **I don't consider we need this**
      - A star or a binary system can have several periods (e.g. pulsation, spin and rotation)
      - Source dependant parameters (main classification, subclass, spectral type, activity index) —> problem of different classification methods —> Doesn't make sense
      - What was done for spatial coordinates? Obscore doesn't contain any information on the nature of the source. Is this now different? Aren't target\_name, ra and dec enough?