



ARCHES Wiki

Hands-on PDF and URLs

[hands-on-xcatdb.pdf](#)

You can connect the database here [<http://xcatdb.unistra.fr/3xmmdr5/archesindex.html>].

Alternatively it can be accessed from the XCatDB [portal](http://xcatdb.unistra.fr/) [<http://xcatdb.unistra.fr/>]

Simple Search

Search by simple position

Use case: Searching XMM detections around the WR star “110 HD 165688”

Step by step:

- Open the query editor
- Type HD 165688 in the Coord/name field
- Submit

query: Select ENTRY From EnhancedEntry In Enhanced WherePosition { isInCircle(“271.987292 -19.399111”, 1, -, ICRS) } Limit 1000

Search by position list

Use case: Searching sources matching a position list

Position list:[download](#)

Step by step:

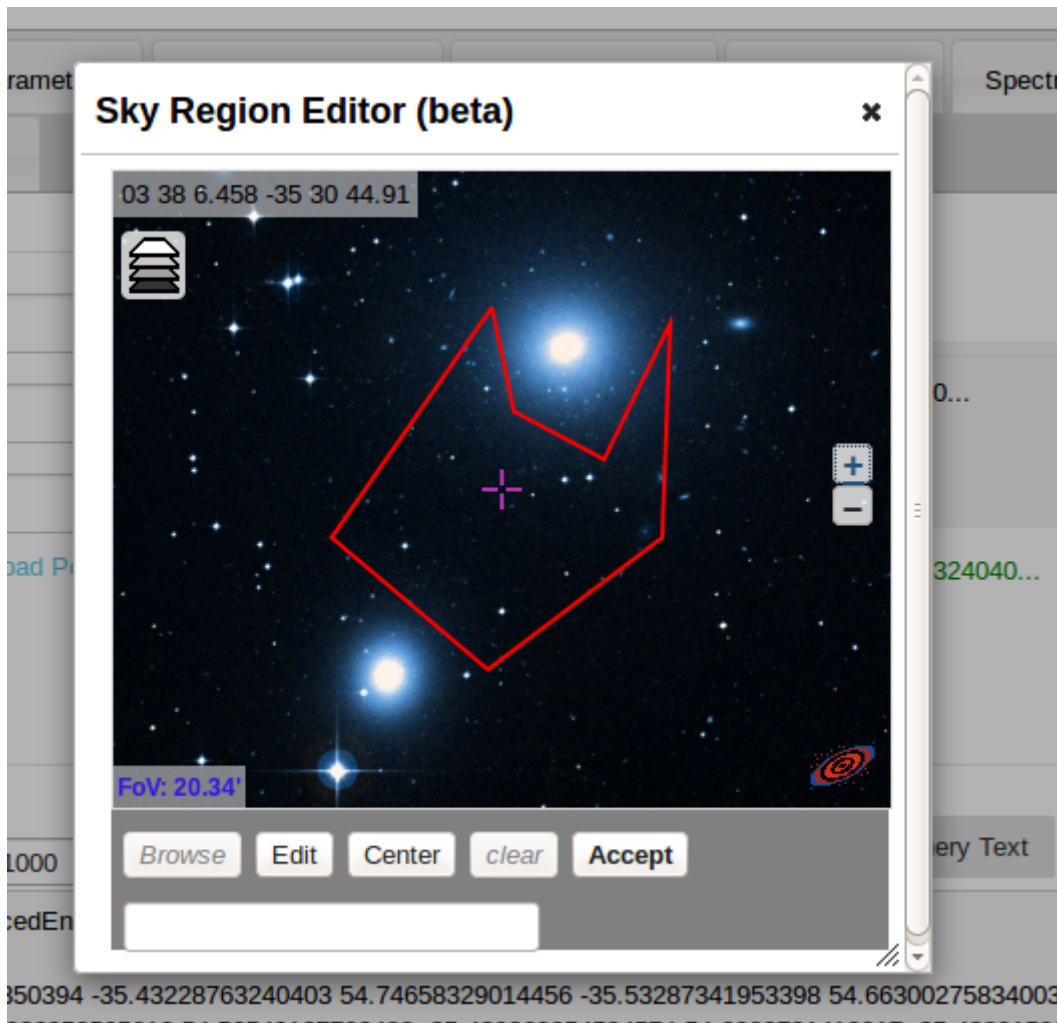
- Open the query editor
- Click on Reset Query Form
- Click on Upload Position List
- Upload the list
- Submit

Search in a region

Use case: Searching sources between NGC 1399 and NGC 1407

Step by step:

- Open the query panel
- Query sources around NGC 1399
- Open the region editor
- Draw the search region, accept and submit



Displaying Result on VO Clients

Use case: Displaying the result of the previous exercise in Aladin or Topcat

Step by step:

- Keep the previous query result
- Open Aladin or Topcat
- Click on the IVOA icon on the top of the data result
- Select a hub to connect to
- Wait the antenna on top of page is emitting
- Click on either Aladin or Topcat or broadcast icon

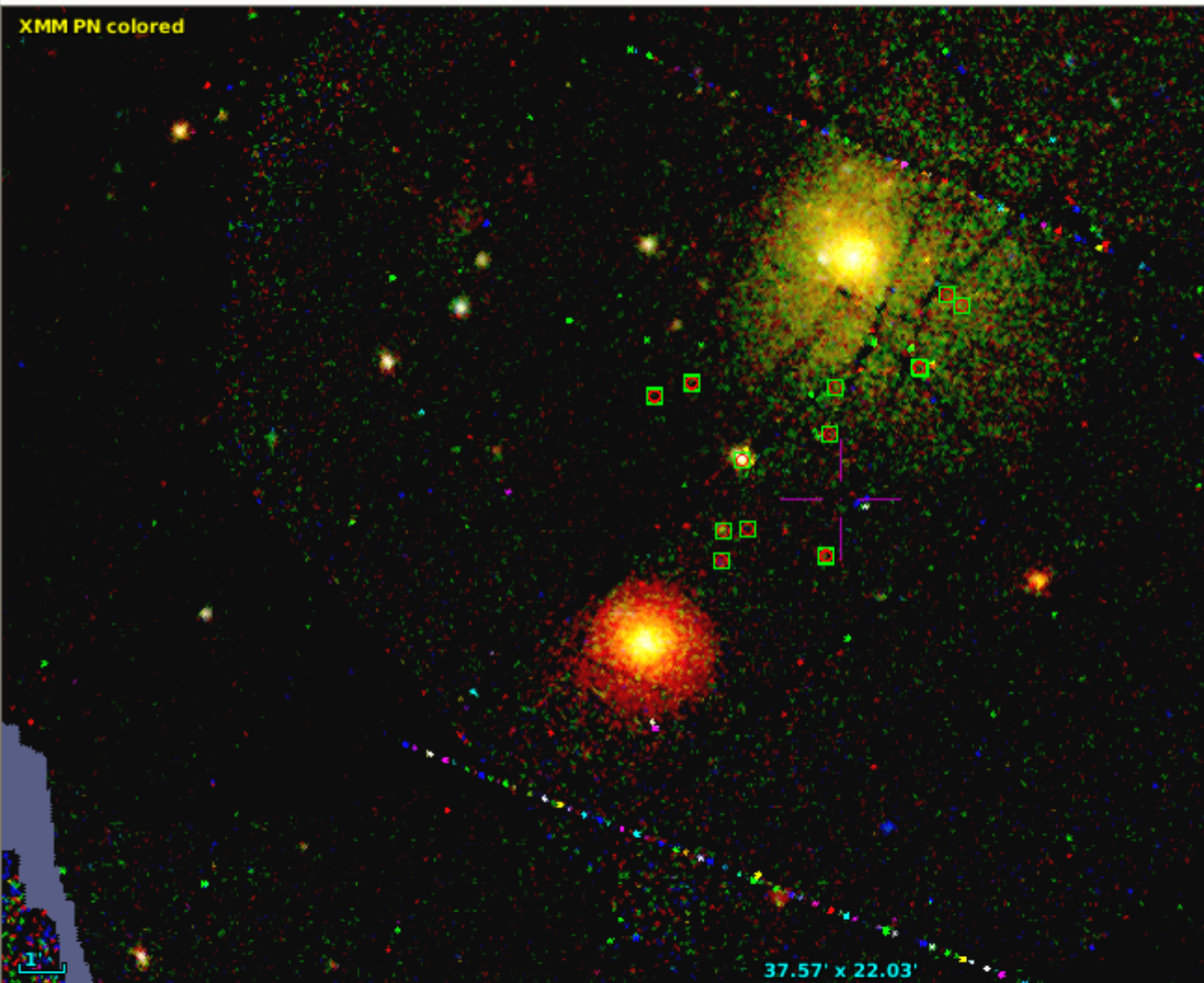
Aladin v9.0 *** BETA VERSION (based on v9.001) ***

Fichier Edition Image Catalogue Graphique Couverture Outil Vue Interop Aide

Position

★DSS ★SDSS ★2MASS ★WISE ★GALEX ★PLANCK ★AKARI ★XMM ★Fermi ★Simbad ★NED +

XMM PN colored



37.57' x 22.03'

grille cligne nord multivues unif.

	oidsaada	namesaada	pos ra csa	pos dec ...	healpix ...	error ma...	error mi...	error an...	XC
<input type="checkbox"/>	58124937...	3XMM J03...	54.57911...	-35.4645...	9053002994	6.668638...	6.668638...	0.0 00	
<input type="checkbox"/>	58124937...	3XMM J03...	54.59044...	-35.4916...	9053001407	4.593916...	4.593916...	0.0 00	
<input type="checkbox"/>	58124937...	3XMM J03...	54.59157...	-35.4913...	9053001407	5.111583...	5.111583...	0.0 00	
<input type="checkbox"/>	58124937...	3XMM J03...	54.63377...	-35.5622...	9052978046	3.844361...	3.844361...	0.0 00	
<input type="checkbox"/>	58124937...	3XMM J03...	54.63399...	-35.5616...	9052978046	2.446188...	2.446188...	0.0 00	

TIP: Pour faire pivoter la vue => Clic&déplace bouton-milieu + CTRL

Search by Detection Parameters

Use case: Searching XMM point sources with a merged flux greater than $2e-10$ and wich are not variable.

Step by step:

- Open the query editor

- Click on Reset Query Form
- Open the Source Parameters tab
- Select the `_ep_8_flux` parameter (use the search bar below)
- Set it as greater than $2e-10$
- Open the Detection Parameters tab
- Select the `_var_flag` parameter (use the search bar below)
- Set it equals to T
- Do the same to set the `_ep_extent` parameter to 0
- Submit

query: Select ENTRY From EnhancedEntry In Enhanced WhereAttributeSaada { (`_ep_8_flux` > $2e-10$) AND (`_var_flag` = 'F' AND `_ep_extent` = 0) } Limit 1000

Search by Sources with Spectra or time series

Use case: Searching XMM point sources with a merged flux greater than $2e-10$ and which are variable with a time series.

Step by step:

- Keep the previous query
- Open the Related Products tab and tick Whatever EPIC Time Series
- Submit

query: Select ENTRY From EnhancedEntry In Enhanced WhereAttributeSaada { (`_ep_8_flux` > $2e-10$) AND (`_var_flag` = 'T' AND `_ep_extent` = 0) } WhereRelation { matchPattern{ EnhancedSrcToSrcTS } } Limit 1000

Using Spectral Features

We suppose here that users are familiar with XSpec

Doing a spectral fit


Use case: Searching detections around *[SWF2005] QSO J1104+3812 abs 0.01012* which are variable point sources and which have EPIC spectra; fitting one of these sources with the Phabs Powerlaw model

Step by step:


- Open the query editor
- Click on Reset Query Form
- Type *QSO J1104+3812* in Name/Coords and click the blue arrow
- Open the Detection Parameters tab
- Select the `_var_flag` parameter (use the search bar)
- Set it equals to T
- Do the same to set the `_ep_extent` parameter to 0
- Submit
- Once the source is selected, open the spectral fit window from the icon below the spectrum vignette.

Link Browser ✕


[Link *EObsSpecToSpecPlot* \(preview\)](#)

 *Download the first product attached through the relationship EObsSpecToSpecPlot*

[Link *zipball* \(data\)](#)

 *Download all attached products in a Zipball*

[Link *phabsPow* \(preview\)](#)

 *Apply a power law model on a XMM-Newton EPIC spectrum*

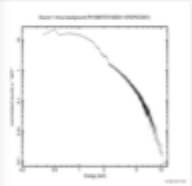
binsize *Number of counts per bin*
 Value


nh *Galactical NH (1e22cm-2)*
 Value

alpha *Photon index of power law (dimensionless)*
 Value

[Link *zphabsPow* \(preview\)](#)

[Link *phaMekal* \(preview\)](#)



M2 Spec. 

- Choose Phabs Powerlaw
- Set parameters
- Submit

Query: Select ENTRY From EnhancedEntry In Enhanced WherePosition { isInCircle("166.113792 +38.208806", 1, -, ICRS) } WhereAttributeSaada { (_var_flag = 'T' AND _ep_extent = 0) } WhereRelation { matchPattern{ EnhancedSrcToSrcTS} } Limit 1000

Searching by Spectral Features

Use case: Searching detections fitting well WAPO but not WAMEKAL

Step by step:

- Open the query editor
- Click on Reset Query Form
- Open the Spectral Fits tab and then the Model(s) tab
- Click once on Wapo, it must turn green
- Click twice on Wamekal, it must turn red
- Submit

Query: Select ENTRY From EnhancedEntry In Enhanced WhereRelation { matchPattern{ EnhancedSrcToFitParam, AssObjClass{SpectrumFitEntry}, AssObjAttSaada{ _wapo_fit = 0 AND _wamekal_fit = 1 }} } Limit 1000

Try to reverse the filter: not fitting WAPO but fitting well WAMEKAL

Filtering by Possible Identifications (ACDS - XMM pipeline task)

Use of the *Correlation with Arch. Src.* tab of the query editor.

Using the Vizier Keyword

User Case: Searching XMM detections which are correlated with both Wolf-Rayet and IR catalogues.

Step by step:

- Open the query editor
- Click on Reset Query Form
- Open the Correlation with Arch. Src. tab
- Select both Stars:WR and IR keywords
- Submit

Query: Select ENTRY From EnhancedEntry In Enhanced HavingCounterpartsWith { "astronomy=Stars:WR" "wavelength=IR" } Limit 1000

Using the Catalogues Vizier

User Case: Searching XMM detections located at less than 5arcsec from a source of the Veron catalogue.

Step by step:

- Open the query editor
- Click on Reset Query Form
- Open the Correlation with Arch. Src. tab and then By Catalogue Names
- Type Veron in the search bar, select the catalogue
- Set the distance as lower than 5
- Submit

Query: Select ENTRY From EnhancedEntry In Enhanced WhereRelation { matchPattern { EnhancedSrcToArchSrc, AssObjClass{arch_7258AEntry}, Qualifier{epic_cat_dist < 5}} } Limit 1000

Playing with Arches Data

Filter Detections by

The image shows a screenshot of the Arches query editor interface. At the top, there are three tabs: "Position", "Detection Parameters", and "Source". Below these, there is a section titled "Correlations with Arch. Src." which is currently selected. Underneath, there are two more tabs: "Require Related Products" and "Photometric Poin". Below the "Photometric Poin" tab, there are two checkboxes with labels: "Whatever Arches Photometric Points" and "Whatever Galaxy Cluster Detection".

Arches tabs of the query editor

Filtering by Catalogue Coverage

Use Case: Displaying sources covered by all catalogues.

Step by step:

- Open the query editor
- Click on Reset Query Form
- Open the Arches Data. tab and then Photometric points
- Click on all catalogues until they turn green.
- Submit

Query: Select ENTRY From EnhancedEntry In Enhanced WhereRelation { matchPattern{ XMatchProba AssObjClass{ArchesProbaEntry}, AssObjAttSaada{ _isgallexcovered > 0} } matchPattern{ XMatchProba AssObjClass{ArchesProbaEntry}, AssObjAttSaada{ _isucac4covered > 0} } matchPattern{ XMatchProba

```
AssObjClass{ArchesProbaEntry}, AssObjAttSaada{ _issdss9covered > 0} } matchPattern{ XMatchProba  
AssObjClass{ArchesProbaEntry}, AssObjAttSaada{ _is2masscovered > 0} } matchPattern{ XMatchProba  
AssObjClass{ArchesProbaEntry}, AssObjAttSaada{ _isallwisecovered > 0} } } Limit 1000
```

Filtering by Catalogue Matches

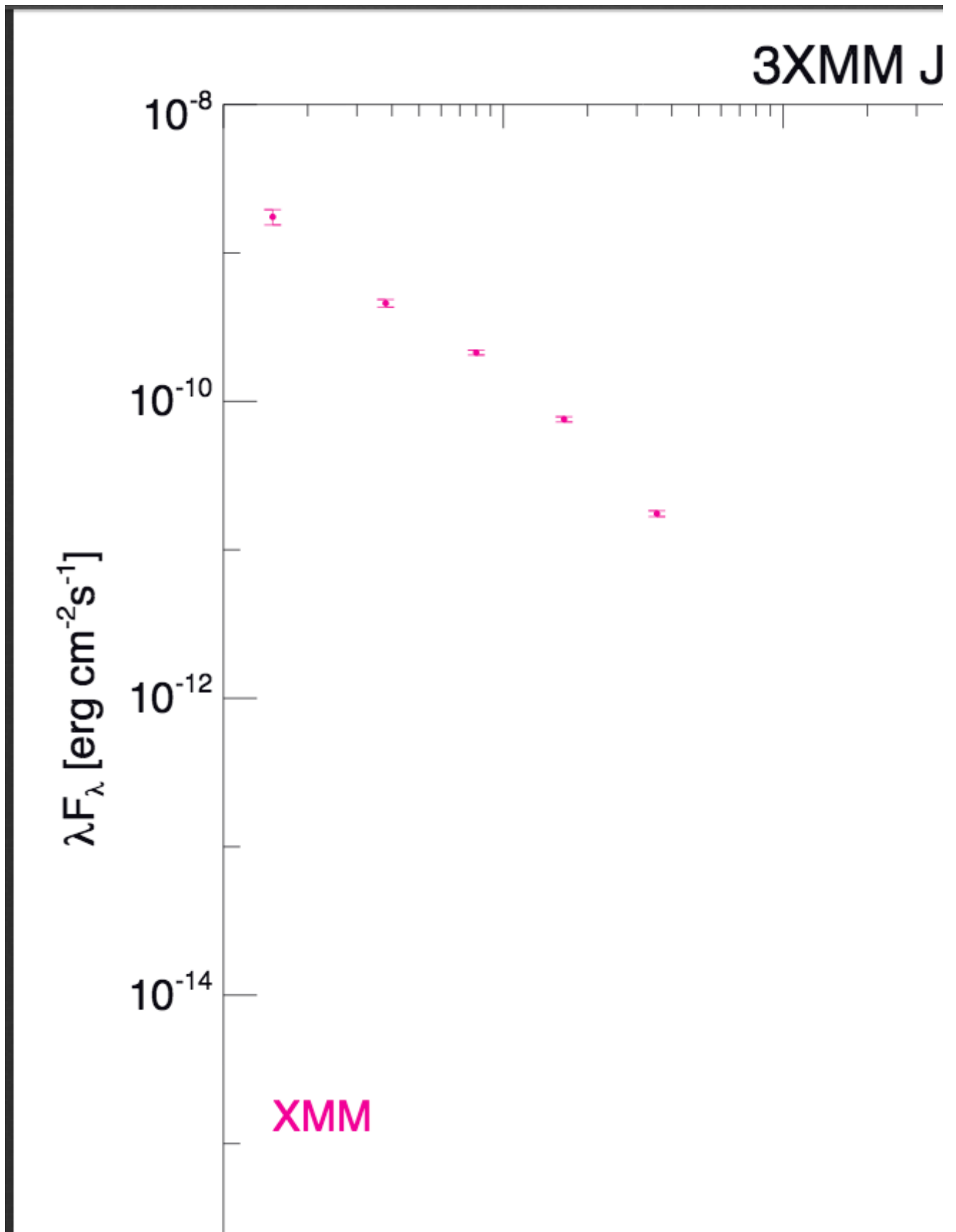
Use Case: Displaying sources matching all catalogues.

Step by step:

- Open the query editor
- Click on Reset Query Form
- Open the Arches Data. tab and then Matching Catalogues
- Click on all catalogues until they turn green.
- Submit

```
Query:Select ENTRY From EnhancedEntry In Enhanced WhereRelation { matchPattern{ XMatchProba  
AssObjClass{ArchesProbaEntry}, AssObjAttSaada{ _maxprobalabel1 LIKE 'proba%g%' AND _maxprobalabel1 LIKE  
'proba%u%' AND _maxprobalabel1 LIKE 'proba%s%' AND _maxprobalabel1 LIKE 'proba%t%' AND _maxprobalabel1  
LIKE 'proba%w%' } } } Limit 1000
```

Result sample



Filtering by Fluxes

Use Case: Searching sources with Galex FUV magnitude lower than the UCAC J magnitude

Step by step:

- Open the query editor
- Click on Reset Query Form
- Open the Arches Data. tab and then Magnitude of Matching Src (with a typo :=())
- Select the `_galex67_fuv_mag` and set is as IS NOT NULL (default value)
- Do the same for `_ucac4_jmag`
- Jump into the query text area on the panel bottom
- Replace `_galex67_fuv_mag IS NOT NULL AND _ucac4_jmag IS NOT NULL` with `_galex67_fuv_mag < _ucac4_jmag`
- Submit

Query: Select ENTRY From EnhancedEntry In Enhanced WhereRelation { matchPattern { XMatchProba, AssObjClass{ArchesProbaEntry}, AssObjAttSaada{ _galex67_fuv_mag < _ucac4_jmag }} } Limit 1000

Looking for Galaxy Clusters

Use Case: Searching Galaxy Cluster detected by the ICF but not identified as such by the pipeline

Step by step:

- Open the query editor
- Click on Reset Query Form
- Open the Arches Data. tab and then Require Related Products
- Click on Galaxy Cluster Detection until it turns green
- Open the Correlation with Arch. Src. tab and then By Vizier Keywords
- Select the `Clusters_of_galaxies` keyword
- Jump into the query text area on the panel bottom
- Place a negation marks (!) before `Clusters_of_galaxies`
- Submit

Query: Select ENTRY From EnhancedEntry In Enhanced WhereRelation { matchPattern{ EnhancedToClusterEntries} } HavingCounterpartsWith { "astronomy=!Clusters_of_galaxies" } Limit 1000

Some Complex Queries

Up to you....