

Discovery, description and access of Radio data in the VO. Status report

F.Bonnarel,
on behalf of Radioastronomy Interest
Group



RIG standard production : 3 notes

- [Radio astronomy in the VO: services implementation review](#),
Version 1.1, IVOA Note 19 November 2021
- « [ObsCore extension for visibility data](#) » becoming
« [ObsCore extension for Radio data](#) »
- New : « [ObsCore extension for Radio data](#) »
Version 1.0 , IVOA note 22 September 2022
- The two last notes belong to DAL/DM for discovery and access
- It's ongoing and somewhat preliminary work. No surprise if you find mistakes !



ObsCore extension for Radio data

(François Bonnarel, Mireille Louys, Baptiste Cecconi, Vincenzo Galluzzi, Yan Grange, Mark Kettenis, Mark Lacy, Alan Loh, Mattia Mancini, Peter Teuben, Alessandra Zanichelli)

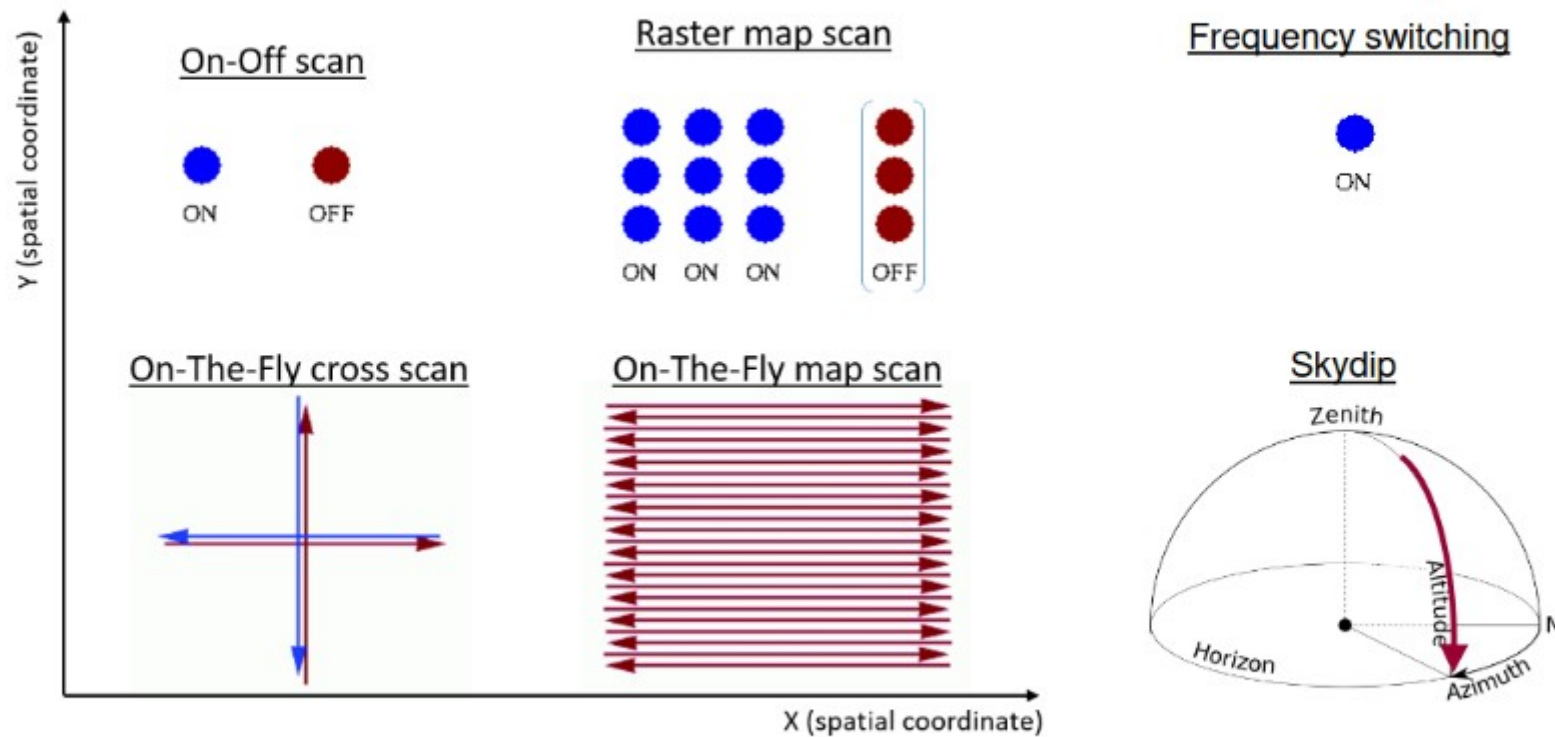


Figure 1: Single Dish Observation Sky scan modes

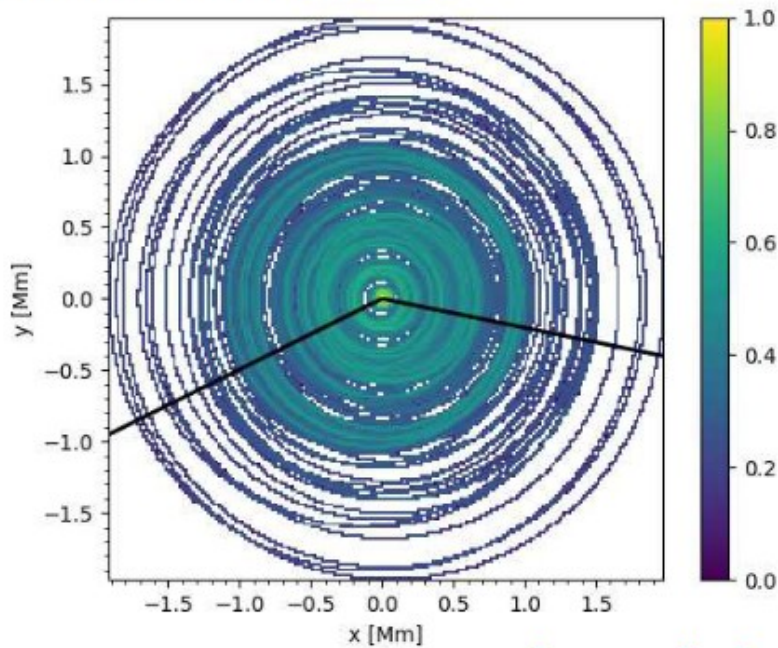


ObsCore extension for Radio data

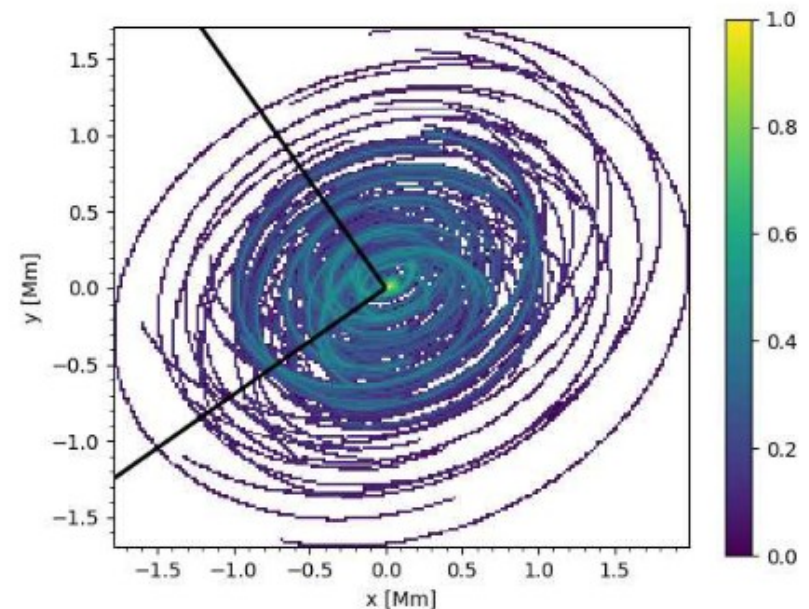
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Interferometry uv coverage maps :

In a well behaved case



In a more common case



https://git.astron.nl/virtualobservatory/lofar_uvw_generator



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- We had a version last year adding specific attributes for interferometry
- Some of them really describing uv coverage, or instrumental arrays aspects
- Some others (`f_min`, `f_max`, `s_fov_min`, `s_fov_max`) where generic radio proposals
- We still discuss `uv_dist_min`, `uv_dist_max`
- We still discuss if `f_min/f_max` have to be part of the extension or results of a udf.



ObsCore extension for Radio data

(François Bonnarel, Mireille Louys, Baptiste Cecconi, Vincenzo Galluzzi, Yan Grange, Mark Kettenis, Mark Lacy, Alan Loh, Mattia Mancini, Peter Teuben, Alessandra Zanichelli)

- We had several meetings for single dish data :
 - how to discover single dish data with their specificities.
 - Tackle sky scanning modes ?
- New version proposes
 - general radio attributes,
 - interferometry/visibility specific attributes and single dish specific attributes
- Please comment on github before this becomes an ivoa note
- Should we promote this as an endorsed note or a recommendation ?



Pulsar and FRB Radio Data Discovery and Access

(Alessandra Zanichelli, Ada Nebot-Gomez, Brent Miszalski, Mireille Louys, Alan Loh, Mark Lacy, Jean-Matthias Griessmeier, Yann Grange, Vincenzo Galluzzi, Mark Cresitello-Dittmar, Baptiste Cecconi, François Bonnarel)

- Pulsar and Fast radio bursts
 - Specific radio time dependant data
 - We had several meetings/presentations on that during 2021/2022
- How do we describe specific radio data in PSRFITS or filterbank ?
 - Mapping PSRFITS keywords to ObsCore
 - Mapping filterbank keywords to ObsCore
 - Specific additions for radio (f_resolution, f_min...)
 - Specific additions for time (folded mode, time sampling...)
 - Specific instrumental/observations provenance features (tracking mode, frontend+backend).



Pulsar and FRB Radio Data Discovery and Access

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- Discovery via sources in catalog and DataLink
- Discovery via ObsCore table :
 - ObsTAP
 - Dataset Acces Protocol (extension of SIA, parameter based)
- Discovery via joint source + obscore details
- Access :
 - Full retrieval
 - extraction/transformation (SODA-like): time series , phase plots, dynamic spectra
- This is more like an impelementation note



Radio astronomy in the VO: services implementation review

- One year old : already to be upgraded for 2022A.
Not done yet
- Missing projects :
 - SKA
 - IRAM/NOEMA efforts
 - NRAO TAP and Jupyter Notebooks
 - LMT
 - GBT



Radio astronomy in the VO: services implementation review

- Evolution to be described :
 - ASTRON : ARTS (FRB) and LOTSS-DR2
 - JIVE : ObsTAP for visibility data new service
 - ALMA : SIA/ObsTAP now provide DataLink access
 - ? ASKAP, MWA ?
 - ? INAF ?
 - ? Nançay ?
 - ? CADC ?
- To be completed in next roadmap

