

Discussion Surveys

Chairs: Elaine and Neeraj

Notes: Vanessa

Date: 29th August 2018

Topic: Surveys

Could have a wiki for communication (started last year: <http://hiabsorption.pbworks.com/>)

Neeraj has a table which brings together this info, can update the surveys details etc

Survey footprints also, include lots of information about the surveys themselves.

Survey description papers etc

Revive the wiki we started last year and circulate it around to the attendees of the meeting

Raffaella: The information that we put should be useful to a broad audience, not just aimed at the experts within the community

Elaine: Not so sure about this

Raffaella: for FAST survey etc, or other wavelengths

Elaine: Data releases, give extra non-expert information then? Start with it being a resource for the internal community

James: FLASH, if you google what those parameters are they are out of date, so we should keep these up to date

Elaine: Teams are not completely isolated so cross talk

Lister: so... FLASH survey paper?

Vanessa: can have a mix of general and focused pages on the wiki

Neeraj: useful to share the more detailed things, show the actual details and bandpass stability and noise etc

ACTION: bring wiki back to life and encourage people to join and add to it

James: Also link to software tools and GitHub repositories etc, on the wiki

Raffaella: Vanessa to set it up but who will maintain

Vanessa: nominate a representative from each survey or group to make sure that section is up to date, I will then chase them

Elaine: Reference fields, reference objects, e.g. Nissim's talk about going back to pre-detected lines and reobserve them, are we convinced that we are getting the same answer for the same source as before? Variability? Gallery/list of bright sources to use as the reference field

Natasha: SPARCS has the reference fields already for continuum, HI is considering them, but maybe absorption could as well?

Elaine: Problem with these fields, equator cannot be reached by APERTIF. Field at +29 too far north, Field at -29+ too far south. Needs different

Raffaella: how do they cope with APERTIF reference field? None of them is ideal

Elaine: discussion with Betsey and Carole, not be constrained by those particular fields, more useful to focus on bright rare objects

Vanessa: how much declination overlaps?

Neeraj: could be added to the table, or incorporated with the survey footprint side

Lister: Could do equatorial field with EW array, bright point sources

Neeraj: Don't need too many HI absorbers, just a few for verification

Elaine: post lists of objects that need a follow-up

Neeraj: also ATCA for lower redshifts?

Elaine: you need the wider collecting area. Also limited frequency range

Neeraj: GMRT goes down to -53 declination

Elaine: Philosophy of databases, but main discussion in next session. FAST would like a

database of things to check, everything in one place.

Vanessa: interested to know about the MeerKAT database and what the scope of that is already

Neeraj: talk about the MeerKAT stuff in the next session too.

Elaine: Variability of absorption lines. If there is significant variability, then maybe we want a set of objects to be regularly monitored.

Nissim: if we do see variability most people don't go back and monitor, so reobserving a few times is a good idea

Elaine: useful for simulators, if things vary does that constrain more?

Lillian: agrees

Lister: Galactic absorption spectrum of Nissim, do people take into account the system temperature variation as things vary with frequency? Fluctuations in absorption line are different where the Galactic emission is

Nissim: Variability as the pulsar moves, but it was Tsys variability back in the 1990s. Not the case with GMRT expected

Elaine: Source structures?

Raffaella: find the continuum structure and determine where the HI absorption is coming from, followup in VLBI continuum is easy (Robert) comparatively. Get continuum structure first and get the HI VLBI follow-up afterwards if needed for complex sources. Continuum is relatively straightforward and can always help with the interpretation.

Vanessa: how long does it roughly take per source with EVN to get continuum?

Robert: about a couple hours (e.g. UV cuts) and then with a pipeline to reduce so quite quick

Elaine: interpretation is hard with VLBI

Nissim: difficult to get the sensitivity, e.g. with EVN GBT, VLBA.

Elaine: What kind of angular resolution needed?

Nissim: 1000km resolution needed, on the scale of kpc, e.g. 5kpc resolution at a redshift of 2, e.g. 0.1", need SKA

Robert: SKA VLBI plans relatively broad, e.g. it might be possible to do VLBI under 1 GHz but no other telescopes to work with

Nissim: SKA phase 1 itself will give enough resolution

Elaine: dust-obscured quasars, bias? May lose the most interesting lines

Nissim: blind DLA survey with JVLA, every AGN which was radio loud at 5GHz and 20 GHz, 250 with redshifts, 21 detections in CO and CO+, reobserved with JVLA, every single line disappeared, large number of spectral channels, so these are 5 sigma noise peaks rather than real lines. Same with the ATCA data, followed up 25 lines but not sure which ones will turn out to be real. Non-gaussianity is a thing.

Elaine: confirmation of detections?

Nissim: Yeah if they can, other surveys could. But not enough overlap in frequency range and sky coverage maybe.

Neeraj: limitations in bands and can't just point anywhere in the sky

Neeraj: Don't discount the fact that we will have more information in the data so we can address some of these things

Elaine: More sources = more things that you're not sure if you've detected or not. Follow-up is an issue, coordination and planning?

Neeraj: parts where overlapping, won't need to observe again or so.

Liz: we have an advantage going to a large FOV because systematics can be tested, because if you see them in the same sources for example

Neeraj: yes before people give us more time we have to prove we have utilised all these avenues

Joe: double blind tests? Like the gravitational wave people

Liz: but there is a difference between detecting 1000s of absorption lines and one gravitational wave at low SN

Nissim: Sources are not dramatically time variable so you can reobserve

Elaine: they can be variable in a number of ways as well, e.g. background source brightness, movement in foreground, scintillation

Raffaella: follow-up is really time consuming, e.g. 250 sources, following them up or checking them with JVLA took a lot of effort. First you have to get the time and then you have to observe them, but 1.5 years later, must be another way to verify that these are real or not without that

Elaine: compare a source count is another way to get to this without follow-up or reobservation

James: depends on what question. Individual objects, then yeah follow up but if it is statistical then just take it into account

Elaine: Simple metric to see if two surveys are on the right track?

Nissim: detection rate is the simplest, at a given redshift. That does evolve. Serious modelling, then you need to follow them up. To get the best science out. Proposal probably has to go to the same telescope to get the motivation, gets the best science from their own follow up

Elaine: Follow up has to be motivated by a science question, to get the time, even if on the same telescope

Elaine: okay let's move on, some topics will come back over the course of the meeting