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HI Absorption 2018

Discussion Synergies and Follow-up

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- What do we want/need to get out of HI absorption (after detection)
 - Images
 - Metallicity
 - It is not just about redshift, but also about line ratios
 - optical imaging of the galaxy, is the galaxy disturbed ...
 - high-res radio (continuum) data
 - DLAs are more relevant for the intervening systems
 - here you want opt+NIR imaging
 - with adaptive optics also for NIR => JWST, but MUSE also possible
 - separate targets from HI detections
 - non-detections are hard and it will be difficult to get follow-up time
 - but it is probably still interesting, e.g., to see why it is interesting
 - CO, OH
 - OH is about a factor 10 weaker than HI
 - relationship between CO and HI seems to be complicated
 - CO and HI may not trace the same region
 - bias against CO

- What do we want? - Stacking
 - will stacking work in the light of large velocity offsets
 - answer will depend on associated versus intervening systems
 - parametrisation of stacking need to be explored
 - anything else than spectroscopic redshifts
 - stacking not possible with photometric redshifts
 - is it too optimistic to get spectroscopic redshifts for all radio sources
 - FLASH predicts about 150000 sight lines
 - photometric redshift needs multi-band photometry
 - it may depend on the science question
 - a two-step approach may be better
 - photometric redshift for the majority of targets
 - and spectroscopic redshifts for specific targets
 - stacking in absorption is harder
 - contamination within in beam
 - need a small-enough beam
 - Apertif should be okay
 - if stacking is done on peak of continuum, it should be fine
 - Filippo tested with ATLAS3D, but with the given sample it was okay
 - but if sample size would increase by a factor of 10, it can become important
 - for larger redshifts it can still become a problem

- Current optical facilities
 - situation in the north better because of more smaller facilities
 - WEAVE can go to south
 - J-PLUS/J-PAS (can go down to equator)

 - in the south
 - S-PLUS in Brazil
 - identical to J-PLUS
 - first release perhaps this year
 - WAVE is similar to WEAVE, but probably no additional option
 - VISTA will put a public call for proposal
 - => proposal as a community, we should start thinking about it now

 - in the future, this will be solved with EUCLID and LSST starting 2024
 - what to do in the years till then
 - photometric redshifts can be provided in the near future
 - also available for the south, Kenneth Duncan knows about them

- Where do we go from here?
 - Additional coordination for follow-up?
 - success rate with ALMA for survey follow-up perhaps lower than specific target
 - Coordination with simulations/theory
 - from the list of Lilian's project idea
 - what do we want from the simulations
 - Small-scales are still a problem
 - simulations have a relatively large amount of freedom
 - simulations probably not to use as a prediction
 - but still look at statistics of population