



ALFALFA at Ithaca June '06

Saturday Open Discussion Notes by Martha



ALFALFA



Dark Galaxies and Lost Baryons, IAU Symposium 244.

Cardiff, UK 25th-29th June 2007
visit

<http://www.astro.cf.ac.uk/iau244/iau244.html>

*Jon Davies invites everyone to attend
and promises a stimulating and fun time!*



ALFALFA

Open discussion Sat. 2



Martha: The next two observing schedules were just posted. We start observing again on Aug 11. Again, we encourage people to join the observing team and we will coordinate with you to providing training by an expert. The best way is if you plan to come for a week or more, not just a day or two. You need to get immersed. We also hope that observers will commit to running the Level I processing of some of the data acquired while they are in Arecibo. It means it won't be a vacation, but you will discover galaxies! This has already been pretty successful. Among the people here, Becky, Bilal, Prasanth, Dave, and Shea all came with me last year, and Tom and his students went with Sabrina. We can also spread out the remote observing too. If you are interested in helping, please let me know and we'll then figure out when. The telescope schedule is not usually available until a month or so before the observing takes place and it changes sometimes on short notice, so this can be frustrating. But we do our best. I note that the August time may be before classes begin for some, so if someone wants to cover it, let me know. (Note: Lyle has volunteered to go in August).



ALFALFA

Arecibo Observatory Telescope Schedule

July 30 - August 13, 2006

TRANSMITTERS

2380	430	HF
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Opt	47	System Checks
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VISITORS

- J. Weisberg
- D. Nice
- J. Davies
- D. Stinebring
- I. Stairs
- J. Rankin
- G. Wright
- Y. Terzian
- P. Buyle
- J. Mathews
- J. Wiig
- J. Goldston
- R. Giovanelli
- M. Haynes
- M. Putman
- L. Ho
- J. Darling
- T. Jones
- H. Shepard
- L. Benner
- S. Ostro

COMMENSAL PROJECTS:
- A2059c with A2010

VER 1.0 - 062306

AST	30 SUN	31 MON	1 TUE	2 WED	3 THU	4 FRI	5 SAT	6 SUN	7 MON	8 TUE	9 WED	10 THU	11 FRI	12 SAT	13 SUN
	P2206														
2	A2048 jd AGES	A2048 jd AGES	A2048 jd AGES	A2048 jd AGES	A2048 jd AGES	A2048 jd AGES	A2048 jd AGES	A2048 jd AGES	A2048 jd AGES	A2048 jd AGES	A2048 jd AGES	A2048 jd AGES	A2010 rg mh	A2010 rg mh	A2010 rg mh
4	A2196	A2195 tj	A2195 tj	A2195 tj	A2195 tj	T2162 jm jw	T2162 jm jw	A2195 tj	A2195 tj	A2195 tj	A2195 tj	A2195 tj			EALFA
6	A2195												EALFA	EALFA	BK127 tg
8	A2222 jg	A2222 jg	A2222 jg	A2222 jg	A2222 jg			A2222 jg	A2222 jg	A2222 jg	A2222 jg	A2222 jg	X111	T2162 jm jw	L-w
10	P2177	MAINT elect	MAINT elect	MAINT f/ut	MAINT f/ut	Tx/Rx	Tx/Rx	P2202 jr gw	P2202 jr gw	MAINT elect	MAINT elect	MAINT f/ut	MAINT f/ut	Rx	X111 to
12	X111 to					MAINT elect	P1693 pf							P1693 pf	A1852 bml
14	A1852 bml														
16								X111 to	X111 pp					R2207 ms	R2207 ms
18	A2149 pb	X108	X108	X108	X108	A1589 bml	P2202 jr gw	P2202 jr gw	X108	X108	X108	X108	A1589 bml	LB6	LB6
20	A1589 bml	A2200 yt	A2200 yt	A2200	A2200 yt	P2076			X111	A1852 bml	P1693 pf	X111 to	P2206 jw dn	R2207 ms	R2207 ms 2100
22	P2206 jw	P2206 jw	P2206 jw	P2206 jw dn	P2206 jw	P2206 jw	P2206 jw	P2206 jw	P2206 jw dn	P2206 jw	P2206 jw	P2206 jw		P2076	P2180 bs
24														X111	



Arecibo Observatory Telescope Schedule

August 13 - August 27, 2006

TRANSMITTERS

2380	430	HF
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Opt	47	System Checks
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VISITORS

- R. Giovanelli
- M. Haynes
- M. Shepard
- L. Benner
- S. Ostro
- I. Stairs
- D. Stinebring
- J. Rankin
- G. Wright
- D. Nice
- R. Ferdman
- A. Wolszczan
- H. McLaughlin
- J. Cordes
- R. Bhat
- M. Putman
- S. Stanimirovic
- F. Djuth
- H. Carlson
- J. Goldston
- F. Camilo

COMMENSAL PROJECTS:
- A2059c with A2010

VER 1.0 - 062306

AST	13 SUN	14 MON	15 TUE	16 WED	17 THU	18 FRI	19 SAT	20 SUN	21 MON	22 TUE	23 WED	24 THU	25 FRI	26 SAT	27 SUN	LS	
2	A2010 rg mh	A2010 rg mh	A2010 rg EALFA	A2010 rg EALFA	A2010 rg EALFA	A2010 rg EALFA	A2010 rg EALFA	A2010 rg EALFA	P2178 dn is	A2010 rg mh	A2010 rg mh	A2010 rg mh	T1892 fd ms	T2212 fd ms	T2212 fd ms	0	
4	EALFA	EALFA	P2113 rb	P2113 rb	P2113 rb	P2113 rb	P2113 rb	P2113 rb	X102 pp	EALFA	EALFA	EALFA	5/5	(b)	(b)		
6	BK127 tg	X102 pp	A2222 jg	A2222 jg	A2222 jg	A2222 jg	A2222 jg	A2222 jg	eVLBI tg cs	X102 pp			(DB)	(DB)	(DB)		
8	L-w	P2205	P2205	P2205	MAINT f/ut	MAINT f/ut	P2030 jc/fc PALFA	P2030 jc/fc PALFA		MAINT f/ut	PALFA	MAINT elect	T2212 fd ms	T2212 fd ms	T2212 fd ms		
10	X111 to	MAINT elect	MAINT elect	MAINT elect			X111 to	X111 to	MAINT elect		MAINT f/ut	T1892 fd ms					
12	A1852 bml						P1693 pf	A1852 bml									
14	R2207 ms						P2171 aw										
16																	
18	LB6	X108	X108	X108	X108 ml	A1589 bml	P1693	P2178 dn is rf	X108 ml	X108 ml	X108						
20	R2207 ms 2100	R2207 ms 2100	R2207 ms 2100	R2207 ms 2100	P2176	P2176	P2176		P2176	P2176	P2176						
22	P2180 ls	R2205	P2205	P2205	P2177 dn	P2202 jr gw	P2202 jr gw		P2030 jc/fc	P2030 jc/fc	P2030 jc/fc	-5/5	T2212 fd ms	T2212 fd ms	T2212 fd ms		
24		X111	X111	X111					PALFA	PALFA	PALFA	(DB)	(b)	(b)	(b)		



ALFALFA

Open discussion Sat 5.



Liese: What fraction of objects in the 1) sample are not already detected in HI (targeted)?

RG: Large fraction not in UGC/CGCG, so not targeted.

Slaz: Remember that of the ADBS, nearly half were not in any catalog.

Jessica: But that does include the ZOA.

Martha: My feeling is that the fraction of objects that are not already in our digital archive is very large, and of course, the most interesting ones are the ones that were not catalogued anywhere before and so not targeted.

RG: We need to put some catalogs out in shorter timescale, though there of course would be larger coverage in another year. Does everyone agree?

Liese: We want to balance publishing with providing a quality product so that we get a positive response. Your strategy seems reasonable.

Martha: What do people think about including as a separate table the category 2 objects (the ones with coincidence with prior info)?

Kristine: Is there a problem that the selection is subjective?

Martha: The AGC is very heterogeneous indeed, but I try to keep it up-to-date with NED out to 18000 km/s.

Liese: What you really want is to publish all the detections that are highly likely to be real. Since the existence of a redshift increase the probability of reality a lot, it seems reasonable to assume the Q2 list even if lower SNR are reliable.



Open discussion Sat 6.



Kristine: Yes, it seems reasonable to include them as long as Q2 has prior redshift info,, but not if the optical id is just some blob on SDSS/DSS.

Liese: Will there also be another sigma cutoff, say for objects not recovered, that is, a systematic upper limit?

Martha: Ann is looking into a tool to measure the aperture rms to provide meaningful upper limits.

RG: Note also that there are multiple reasons for dropping an object, like comparison of the 2 pols, close to some known RFI etc. Close to the SNR limit, one has to be very careful. There is no completeness limit at those low levels. By the way, last night Brian reobserved 13 objects from the Q3 list and confirmed 7 plus 1 maybe. This is a higher success rate that I might have expected. We asked for only 18 hours of follow-up time, part of which is being used to map the ridge of VirgoHI21 from N4254 all the way to the top of the current ALFALFA map.

Also, while we were at Arcetri, Sperello discussed a project to use ALFALFA to get detections/limits for an optically selected sample of E/SOs. We might also consider that the catalog of "priors" may eventually include non-detections.

Slaz: I am just concerned about the magnitude of the reduction task. There is probably 10-20 person years of work to be done. Is this reasonable given that we have teaching obligations and the observing has to be done too?

RG: This is definitely an issue, though I question your estimate. And let me point out that Becky, Tom and Noah are coming for all/part of next year. But we certainly need people to pitch in. Especially to milk the science most efficiently.



Open discussion Sat 7.



Brian: I did 22 grids in 3 weeks.

Tom B: What about undergrads? Can an undergrad do a grid?

Martha: Yes, but only with close supervision and with a degree of commitment. The student needs to get involved over long time so that he/she really understands what signals and rfi look like, what can and cannot go wrong. But Josh & Bilal are examples of students who have been trained and can tackle the grids.

Jon: What is the bottleneck in the processing? Could you rely on an automatic signal extractor, on all grids, at high SNR, and then make a catalog of all those sources?

Martha: You have to ask whether a catalog of rather high SNR would really be very interesting. As Slaz has said several times, the most interesting objects are the low SNR ones. So a high SNR catalog might not be the best approach.

RG: You have to inspect to look at RFI/pols, if you want to go the extra step to low SNR. The extractor keeps sources but tells you when to be careful (based on appearance near RFI or in both pols). Bottleneck is visual inspection.

Tom: How do you know what your completeness limit? If the baseline changes the SNR, how do you know where to cut?

RG: That is a thorny issue; we have to try to be consistent, both within the group and over times. Quality control is really important. Especially watch out for sidelobes of continuum sources. I don't see a way of implementing a perfect extractor. Amelie: to what degree do you think it can be trusted in a blind way?



Open discussion Sat 8.



Jon: At what SNR ratio limit do you think you are safe?

Amelie: The simulation of statistical reliability with varying SNR that I performed was based only on ideal data (noise limited only). Between SNR~4.5-5, detections become less trustworthy because of residuals from RFI. I would trust anything above 6 pretty much.

RG: We will also have catalogs which will be the result of the extractor, including objects for which we have not extracted fluxes. These would be completely objective for source candidate identification, but without human weeding. It would probably contain >2X as many objects. Would these be useful (more complete/objective, but less reliable)?

Barbara: Isn't this just Q3?

RG: 3) is already somewhat selected; the visual inspection may suggest to drop objects. We could also though have a catalog pre-visual-inspection which would contain everything without any human influence. For example, Karen might want to know if there is any hint at the position of an object she is interested in.

Barbara: Do those catalogs already exist?

RG: More or less. The issue is whether the extractor is being applied entirely homogeneously, what cutoff we each set as the SNR threshold, between 4 and 4.2.

Barbara: Maybe you should settle on one limit.

RG: Yes, but remember that the extractor is fitting Gaussians, so the SNR becomes a little arbitrary depending on the shape of the source (e.g. if there are two objects close together; fitting a single gaussian will not give a great fit).



Open discussion Sat 9.



Robert: Are the grids going to be available to others for the team could look through them using some other software?

RG: We are looking into distribution, but we're not prepared to serve cubes. And, a question for us is at what stage does a grid become a public product?

Jessica: Are you talking about trying to do the signal extraction elsewhere?

Martha: The production of a grid (before baselining and flatfielding) has to take place here because all the datasets exist here (several TB) and we have no way of transporting or serving that dataset. So we'll have to do the job. But, we've set up a scheme whereby John Salzer and John Cannon can generate the grid here and then copy it to Wesleyan. We have to settle on this kind of an arrangement on an individual basis because we don't have access to any resources beyond those of our group. We can't have 5 people running grids on a machine that someone else is trying to use.

RG: Also, an important issue is that quality control must be maintained. For example, the pos files can be updated on a daily basis. So it is not feasible to ship the dataset around. And we hope that people will commit to contribute to the final team effort since we're not in the business of producing catalogs for other people to use without getting to do any science ourselves. And, the protocol for making the grids public is not final. The public data releases will first be catalogs. NAIC will play a role in this.

Tom: How do you balance public access with protecting grids assigned to individual projects, especially student projects?

Robert: Will data for a PhD project be held back from publication for a longer period?



Open discussion Sat 10.



RG: It will be hard to do that. A student won't really have ownership of part of the sky. We post very clearly what are the projects being undertaken by the group.

Martha: The fact is that the students who are involved are way ahead.

Brian: One of the issues with the grids is the bandwidth needed to download them. Remember that each grid actually also has a weights grid. There are interesting possibilities using a new technology is AJAX, which is the same technology as GoogleEarth. Issues revolve around what do we put in the local (download) database, to allow real time scrolling, etc. These issues have to be worked out.



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