

Report RSRO activities, NRAO Socorro

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Project: Continuum HALos of Nearby Galaxy – an EVLA Survey (CHANG-ES)

Project code: 10C-119 (awarded 405 hrs in B,C,D configuration, C and L band)

My stay at NRAO was preceded by 3 months each by Judith Irwin (PI of the project) and D.J. Saikia (member of the consortium). PhD student Philip Schmidt stayed as RSRO for 3 months from end of January to end of April.

Activities:

(listed in chronological order)

1. Attended 1st data reduction workshop (September 2011).
2. Prepared D-array observations.
3. EVLA guides document on preparing low frequency observations – prepared together with Emanuel Momjian:
http://evlaguides.nrao.edu/index.php?title=Low_Frequency_Observing
4. Reduced first D-array observations.
5. Tested the automated flagging task in CASA, testautoflag (now tfcrop option in the task tflagdata in version 3.4 of CASA). Found it necessary to flag in several steps in order to reach a result similar to that of manual flagging. The time gain was not large enough compared to manual flagging (especially for C-band data), but with some practice, might be useful for multiple L-band data sets with more RFI contamination. Later continued the tests (spring 2012) on the new rflag option in tflagdata.
6. Prepared C-array observations.
7. Helped out at the 2nd Data Reduction workshop (February 2012).
8. Reduced C-array observations.
9. Checked the first C-array C-band observations which were observed when dipoles were attached to two antennas – checked for disturbances due to the dipoles. None were found.
10. Supervised and taught PhD student Philip Schmidt to do data reductions. Philip spent a lot of time working on primary beam corrections of 2-pointing observations.
11. Attention was drawn to “Delay Clunking”, the bow tie feature seen in the phase vs frequency for each spw (currently cannot be corrected for).
12. Supervised and taught PhD student Carolina Mora to do data reductions during 2 weeks. Also assisted collaborator Rich Rand (UNM, member of the CHANG-ES consortium) with EVLA data reductions with CASA (1 week).
13. Created semi-automatic (sans flagging) scripts for quicker reducing CHANGES data, easy to adapt to each data set.

14. Continuously updated the CHANGES data reduction guidelines document (created by J. Irwin), current version available by request.
15. Engaged in weekly data reduction skype meetings with members of the consortium currently reducing data.

Throughout the time spent at NRAO, CASA meetings were attended and CASA tasks were discussed. For example, we brought to attention that the task SETJY is missing the ability to set values on a per channel basis rather than per spectral window only (this is now on the list to be changed for the next CASA release, 3.5). Also, messages delivered during the task POLCAL (to get the position angle table (Xf)) are not clear enough, leading the user to believe that the task has failed.

This RSRO stay has been indispensable for the CHANG-ES project, in helping our members to be able to reduce the data in a timely fashion. I have gained proficiency using CASA for low frequency (C and L band) data reductions, including polarization, and have been able to spread the acquired data reduction knowledge to members of the consortium. The CHANG-ES consortium are planning a workshop for all members in summer 2013, during which I will give a few sessions on CASA data reductions.