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A newsletter for users of the NRAO
*A*stronomical *I*mage *P*rocessing *S*ystem

Written by a cast of *AIPS*

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General developments in *AIPS*

Current and future releases

We had not expected to have any further formal releases of *AIPS*. Instead, *AIPS* has been available as the `31DEC99` version since October 1999. However, *AIPS* continues to be heavily used and will likely remain in use with limited development for some years to come. Therefore, we have reinstated the old practice of having formal *AIPS* releases. These will be done on an annual basis and there will be a binary release only for Solaris and Linux. All architectures can do a full installation from the source files. Therefore, we have changed `31DEC99` to `31DEC00` and it is now, or soon will be, available as a frozen release. Tape and CDrom copies will be available; see the *AIPS* web page or use the order form at the back of this *AIPSLetter*.

The next release will be called `15DEC01` and remains under development by the (reduced) *AIPS* Group. You may fetch and install a complete copy of this version at any time. Having done so, you may update your installation whenever you want either as a whole or by running the so-called "midnight job" which uses transaction files to copy and compile the code selectively based on the code changes and compilations we have done. We expect users to take the source-only version of `15DEC01` *AIPS* over the Internet (via *anonymous* ftp).

AIPS is now copyright © 1995 through 2000 by Associated Universities, Inc., NRAO's parent corporation, but may be made freely available under the terms of the Free Software Foundation's General Public License (GPL). This means that User Agreements are no longer required, that *AIPS* may be obtained via anonymous ftp without contacting NRAO, and that the software may be redistributed (and/or modified), under certain conditions. The full text of the GPL can be found in the `15JUL95` *AIPSLetter*.

Personnel

The *AIPS* Group, none of whom work full time on *AIPS*, consisted a year ago of Chris Flatters, Ketan Desai, and Leonia Kogan doing programming and user support at the AOC in Socorro and Eric Greisen and Pat Murphy performing similar roles in Charlottesville. Ernie Allen handles data base and shipping chores for the Group. This was a pretty minimal group to support such a large and widespread software package. Unfortunately, this group has been eroding. Pat is also Head of the Charlottesville Computing Division, a nearly full-time job. This summer, Chris left the group to join Ketan (who left in the spring) both to find greener pastures working in the New York City area. We wish them well in their new endeavors, but their departures have left us well below minimum strength. The position advertised, among other places, in the previous *AIPSLetter* received very few applicants and was not filled.

Three actions are being taken to address these problems. First, Eric has moved to Socorro on a permanent basis. Second, with the bulk of the applications support now being done in Socorro, Jim Ulvestad replaced Tony Beasley as the nominal supervisor of the *AIPS* Group in May. Third, despite NRAO's current financial problems, a position to replace Ketan and/or Chris was announced and advertised via `bananas`, various web pages, and the AAS. Amy Mioduszewski has accepted the position and will begin work in Socorro in mid January.

Improvements of interest to users in `31DEC00`

We expect to continue publishing the *AIPSLetter* approximately every six months along with the annual releases. Despite the reduction and disruption in personnel, there have been a surprising number of changes in `31DEC00` over the past six months. There are three new tasks: `FACES` to convert a coordinate and NVSS catalog into an initial set of images and Clean components, `OOSRT` to sort *uv* data, `MATCH` to change a *uv* data set to have `FREQID`, source, and antenna numbers matching another data set, and `PBEAM` to fit observations of the primary beam. New verbs are `COPIXEL` to convert between physical and pixel coordinates and $\sim$, the tilde sign, to assign a list of values to an array starting at any specified subscript.

`31DEC00` treats data weights in different ways than earlier releases (see below) and has a variety of changed adverb names and the like. Other than these relatively minor ways, `31DEC00` is compatible in all major ways with the other 1999 and `15OCT98` releases. There are significant incompatibilities with older versions.

Imaging and Clean models

IMAGR

`IMAGR` was given the option to remake all fields automatically every n major cycles in the "`OVERLAP` n" mode, where $n > 2$ is the (new) user-specified value of `OVERLAP`. This option is likely to be used when Cleaning without use of the TV. The task was changed to restore only the width-zero fields when Cleaning with the multi-resolution algorithm. The method of restoration used means that the other versions of the fields only differ by having smoother noise. Whenever `IMAGR` has just computed all fields in the `OVERLAP` ≥ 2 mode, it will load the TV with the field it will Clean next (unless the user changes the boxes). Previously, it loaded the last one displayed. `IMAGR` was also given the ability to have *no* Clean boxes in a field, indicated initially by setting `FLDSIZ` for that field less than zero. The final Cleaned flux in each field is now reported..

A few bugs affecting only `IMAGR` were fixed. Tapering was not done when natural weighting was specified. When "3D" imaging using `OVERLAP` < 2, the computation of the histogram of residuals was done only on the first field. This was able to confuse things badly, allowing way more than `MAXPIXEL` pixels to be loaded to the AP and ending up in nearly infinite loops. Now the histogram is done over all images. `IMAGR` was filtering the Clean Components if that option was requested at the beginning, even if a `TELL` was used to turn it off later. A bug was corrected in the gridding of data. This bug was most likely to affect sparse data being gridded for a large image using a small pseudo-AP memory.

Clean-component modeling

Many of the same routines are used to subtract Clean components while finding them in `IMAGR` and later to use them for modeling and calibration in `UVSUB`, `CALIB`, and numerous other tasks. Some potentially significant bugs were found and corrected. A change to allow parallel operation in DFT point component division changed the meaning of the array used to scale from the first to later frequencies. Unfortunately, the calling routines that prepare this array and other similar `Q` routines that also use it were not changed. They are now all consistent. This bug could, among other things, reduce the ability of a Clean model to eliminate a distant interfering source.

The gridded subtraction routine for time-baseline sorted data had an annoying habit in large cases of looping through all the data once for each spectral channel and IF and each of several swaths in the *uv* plane. The routine, `ALGSTB`, was changed to overlap the swaths to allow all frequencies to be subtracted at once.

For some time, the model subtraction and division using a user-specified SMODEL has failed. This option is only supported by the DFT routines, but the gridded ones were called. Therefore, the output data did not have the model subtracted or divided.

The model-using tasks were changed to allow use of the model from one or more consecutive fields beginning with field n, where n does not have to be 1. Previously, the new naming convention for fields did not allow for excluding low-numbered fields from the model.

Using survey catalogs

The task SETFC is designed to determine the "faces" or fields needed to image the primary beam area fully and to image any interfering sources if they are likely to be strong enough. It writes a BOXFILE for use by IMAGR. SETFC has been improved since the last *AIPSLetter* by adding 1950 as well as 2000 catalogs, by adding a flux cutoff control, and by including the Westerbork Sky Survey (WENSS) as a catalog as well as several NRAO VLA D-Array Survey (NVSS) flux-limited catalogs. Also inserted were schemes suggested by Bill Cotton for selecting cell and image sizes and for positioning the "fly's eye" faces to cover the primary beam. The task now writes to the BOXFILE an inscribed circular Clean box for each of the fly's eye faces and. optionally, small circular Clean boxes for each of the interfering sources. A new task called FACES has been written. It is designed to read the catalog files and create a set of images with associated Clean components files based on what it finds in the catalog. These CC files may then be used as an initial guess to calibrate the first self-cal cycle of the corresponding observation. It uses Bill's schemes as well.

Both of these tasks plus PBCOR and PATGN need to have a correct antenna power pattern. The beam computation has been pulled into a single subroutine (called PBCALC) used by all these tasks. To improve the form used and the default values, new observations have been made with the VLA by Rick Perley and a new task (PBEAM) has been written by Leonia Kogan to fit the observations. The results of the fitting have been installed in these tasks and the fitting task has been made available. Wavelengths longer than 21cm remain to be done with the new tools.

UVCON

UVCON generates a *uv* data set from a user-specified array geometry and a source model specified in the usual ways (Clean components, image, or SMODEL). DFT is used to compute the model visibilities. This task has been used to study ALMA configurations and other array design questions. In June, the ability to study the effects of pointing error was added. Three types of primary beam are offered: flat illumination (like the VLA), illumination down by 10db at the dish edge, and illumination down by 15db. Three kinds of pointing error are offered as well: a constant error for all antennas and times (*i.e.*, a source position error), an error that is constant in time but random among antennas, and errors that are random in time and between antennas. Preliminary results from this task suggest that modest random pointing errors are less important than were previously thought.

Other imaging changes

HGEOM and OHGEO gave the user little control over the reference pixel in the output image. The output reference pixel is now controlled by adverbs and the defaults were changed to be more consistent. The output header in OHGEO was corrected to contain the coordinates of the first image for axes 3–7. An I.O error, which caused the output of all *GEOM tasks to be wrong for large cubes, was corrected.

XTRAN was changed to give it a DOOUT = -2 mode to test what it would do when just changing the header. The computation of header parameters was corrected and a second report of their accuracy compared to the full fit was added. The re-gridding was changed to use the full x and y fits even when only three parameters are found. This seems to handle skew to some extent. Corrected handling of BLC and TRC and made the task use only those star positions inside the sub-image being fit rather than all the positions in the text file.

CONVL needed larger buffers to handle images up to 8192 on a side. It cannot handle larger images and a warning about this was added.

IRING had its coordinates fixed just before the last *AIPSLetter*, but that left the beam area negative. Corrected this and fixed an error handling `BLC`.

FLATN has been upgraded to do both multiple pointings, using the new beam pattern routine, and multiple fields. `LTESS` plus `HGEOM` may no longer be required for mosaics.

Interferometric data handling

VLA data weights

Data weights are supposed to be, or at least be proportional to, one over the rms uncertainty squared. In the past, there seemed to be little, if any, effective way to measure this, so a simple count of the number of 10-second records was used with VLA data. The on-line measurements of system temperature are known to suffer from systematic errors in their calibration and so were thought not to be useful. However, Ketan Desai (*AIPS* Memo 103) pointed out that the "nominal sensitivity" which is measured on-line is the scaling applied to the visibilities to convert them roughly to deciJy. The nominal sensitivity is then a measure of the rms uncertainty that suffers from the *same* calibration errors as the data themselves. Thus, if the calibrations found by `CALIB` and friends are applied to weights initially set by the nominal sensitivity then, after calibration, these weights will be proportional to $1/\sigma^2$ as desired. In the previous *AIPSLetter*, we described how the VLA task `FILLM` is able to set these weights and how all calibration application tasks can use `DOCALIB=2` to signal the desire to calibrate both data and weights. The `DOWEIGHT` adverb has since been added to `FILLM` after this scheme was found to be effective. Compression of *uv* data eliminates the differences in weights between IFs and polarizations within each data sample. Since, in the new schjeme, these weights can differ substantially, uncompressed data should probably be used where feasible.

On July 7, 2000, Chris Carilli reported:

As promised, the following is a summary of the use of the "VLA weight cal transfer' for some recent 43 GHz data from the VLA. Overall, the process works properly, and will make the calibration, flagging, and imaging procedures significantly easier, and improve the sensitivity of the final image.

In review, the process is needed in order to have proper data weights based on measured T_{sys} values and antenna gains. The current implementation is very simple, requiring a value of `CPARM(2) = 8` *(or* `DOWEIGHT = 1`*) in* `FILLM`*, then follow the normal calibration procedure, then use* `DOCAL = 2` *in* `SPLIT`*. This process is extremely useful at 43 GHz and 22 GHz, where the system response varies by more than a factor two from the best to the worst antennas, but is also useful at 1.4 GHz where the T_{sys} increases due to spill-over at low elevation.*

I loaded data from project AI79 (high redshift CO at 43 GHz) in both the usual way, and in the new proper cal-transfer way. I ran `CALIB` *and found that antennas 17, 20, and 24 all had much higher (poorer) gains than most antennas, by a factor between 3 and 5. After splitting with* `DOCAL = 2`*, the weights for baselines involving these antennas were lower by similar factors than for other baselines. A good example of this was antenna 26, which had a gain factor about two times higher than good antennas. After splitting, baselines involving antenna 26 had weights about two times lower than those for good antennas.*

In terms of image noise, the results for the rms on NA weighted images are:

All data with weight transfer:	0.178 *mJy/beam*
All data without weight transfer:	0.310 *mJy/beam*
Without ant 17,20,24 with weight transfer:	0.185 *mJy/beam*
Without ant 17,20,24 without weight transfer:	0.220 *mJy/beam*

Calibration problems

CALIB takes the times from the `NX` table and rounds them outward by a little to be certain to include all the data from that scan. Unfortunately, a "little" was 4.32 sec, rather more than the comment claimed, and able to overlap into the next scan in phase-switching experiments (which may be separated by only 3 seconds). The result was a series of good solutions separated by rather poor ones from the couple of seconds of overlap.

CL table and `BP` table weights were not examined by most calibration application routines although they are used to flag solutions by `SNEDT` and other routines.

NX tables may be missing and the calibration routines try to function without them. This is actually the normal case for single-source files, but now gets a warning on multi-source files. Source-specific data selection and flagging were failing in this case and required generalization.

INDXR was capable of getting the wrong antenna and subarray numbers from the internal code in, one hopes, rare circumstances.

CALIB now supports the minus sign convention for `DOFIT` to mean all but those listed.

GETJY had an error causing the antenna deselection option to fail on some computers.

FG table copying with `UVCOP` and other tasks failed to delete records correctly when they fell outside the selected range of IF and spectral channel.

Simplified VLBI data reduction

A new `RUN` file called `VLBAUTIL` has been added to the system along with all supporting `HELP` files including one for `VLBAUTIL` itself. The procedures contained in the file are intended to simplify the reduction of normal VLBA data. The procedures are

`VLBALOAD`	loads VLBA data with simplified inputs
`VLBASUBS`	finds subarrays in VLBA data
`VLBAMCAL`	removes redundant calibration data from tables
`VLBAFQS`	copies frequency IDs to separate files
`VLBAFPOL`	fixes polarization labelling for common cases
`VLBACALA`	determines a-priori amplitude corrections
`VLBAPANG`	determines phase corrections for parallactic angles

A new appendix to the *CookBook* has been written to represent a simplified approach to VLBA data reduction. It has been released as a VLBA Memo (see below) and will become part of the *CookBook* shortly. This memo includes a brief description of when the above procedures should be run in data reduction process. Within the next few months we plan to add a procedure to apply pulse-cal tones and to improve the procedure used for polarization D-term (leakage) calibration.

VLBI data handling

MATCH is a new task. It copies a data set renumbering the sources, antennas, and `FREQID`s to match those in a second data set. The task may be needed to align data sets from multiple files or extra-wide bandwidth observations processed with the VLBA correlator.

FXPOL was completely re-written. At the expense of a more complicated user interface, it is now able to rearrange and correct the labeling for polarizations in all possible combinations produced by VLBI correlators around the world. In order to do this, it is necessary for the task to make a new copy of the data set, rather than modifying it in place.

FRING now uses dynamic memory to allocate the space needed to do wide fringe searches. There are therefore fewer limits on such searches for machines with lots of real and virtual memory.

FRING takes the times from the `NX` table and rounds them outward by a little to be certain to include all the data from that scan. Unfortunately, a "little" was 1.0 sec, rather more than the comment claimed, and able to cause some confusion about which data is which.

APCAL was corrected to stop adding a scan between every solution interval and to function correctly when the `TY` table contains data for a source not in the source table. An option to limit plots to $<$ `APARM(5)` in $\sec(z)$ was added.

FITLD made errors when attempting to select IFs which we believe have been corrected. This selection of IF and ones done later may have different results due to the reordering of IFs done by FITLD.

MK3IN put weights of zero which mean "no good" in the CL table even though it also put in a useful a priori phase calibration.

Other *uv*-data changes

Ionospheric data handling from IONEX data files by TECOR was corrected. A package of source code for a stand-alone utility to combine several IONEX files into one for TECOR was placed in $APLCONTR under the name cationex.*. An html file describes how to construct and use the package.

FILLM will now stop in end-of-tape conditions without trying to do all requested files. It will load pointing data only if the right bit is set in CPARM(2) (= 16). A number of errors in the detection of changes in correlator configuration were repaired. They caused data to be written to the wrong output file. In solar mode, the nominal sensitivities applied to the data confused polarizations which are in a different order on the tape and inside AIPS. Only RR was correct, RL was applied to LL, etc.

OOSRT is a new task to sort *uv* data. It uses the OOP sort routines but seems to hav no serious advantage over UVSRT.

UVFLG can now flag a range of elevations rather than just data from below a specified elevation.

FLGIT had a bad error in the handling of the user inputs causing it to flag below $\sqrt{\texttt{APARM(4)}}\sigma$ rather than APARM(4) σ. Also, the V polarization test was done too soon which made it seem more important than it should be.

EDITR and other EDIT OOP class tasks had problems handling the all-polarization and all-IF modes when the data were allowed to be crowded. The REDO and UNDO options also needed some repair.

IBLED did not apply correctly the option to "flag all baselines with one antenna" when applying flags directly to the data.

UVFIX precessed only the first subarray to J2000 and used the time of the first sample rather than the first sample of the current subarray. The former caused serious problems in imaging multi-subarray data sets after UVFIX.

DBCON failed to copy CL and FG tables if one of the files did not have any and failed to correct the subarray number and times. It also failed when combining LL-only data with RR/LL while writing a compressed output. The output RR data was not zeroed properly.

UVCOP failed to flag data properly if the selected FREQID was bigger than 1.

General items

~ — the tilde sign — is a new verb to assign a list of values to POPS memory beginning at a scalar address. This is the way to get around the limit on the size of a POPS input line. Thus,

```
RASHIFT = -200, -150, -100, -50, 0, 50, 100, 150, 200
RASHIFT(10) ~ -200, -150, -100, -50, 0, 50, 100, 150, 200
RASHIFT(19) ~ -200, -150, -100, -50, 0, 50, 100, 150, 200
```

fills in 27 values of RASHIFT in three lines.

COPIXEL is a new verb to convert between physical coordinate values (adverb COORDINA) and pixel coordinates (adverb PIXXY)

PUTTHEAD is now allowed to add keywords to a table header. Previously it was only allowed to modify pre-existing ones.

ICHANSEL is a new adverb replacing CHANSEL in a large number of tasks. ICHANSEL(4,i) specifies the IF for which the other spectral channel selections apply. IF 0 implies all IFs. ICHANSEL also replaces NBOXES and BOX in some tasks.

FITAB had an egregious error that destroyed the first part of input *uv* data files on occasion; see programmer section. The error handling in `FITTP` and `FITAB` now keeps tape errors in writing tables so that the task will actually quit.

CookBook was updated in April along with other general documentation files.

Web site The main *AIPS* page `http://www.cv.nrao.edu/aips/` was reorganized to match the style of the top level NRAO main pages; in addition, a section for special notices — currently with the position announcement – and a table of contents were inserted near the top of the page.

Data display

XAS can now work on true-color displays that use 24 bits for the pixel values as well as those that use 32 (wasting 8). Errors causing it not to repaint all pixels in zoomed split screens and to abort for using bad addresses in high zoom plots have also been corrected.

UVPLT can now plot data weights, elevation, hour angle, and parallactic angle. For the last 3 of these, it offers the option of using the value at `REFANT` rather than the average of the two antennas of each baseline. (This makes a big difference in VLBI.) In fixed-scale plotting, the display of source name, the handling of the scales, and any looping over subarrays were corrected. It will now try one subarray when there are no `AN` files. When looping over subarrays and `FREQID`s, it will not die if there are no data for some of the combinations.

TVLABEL and `TVWLABEL` now offer a choice of the graphics channel to be used for labeling.

BLSUM now offers the option of writing a text file suitable for use with `PLOTR` to plot the spectra from up to 5 blotch regions.

ISPEC will reverse the z axis in plots if `ZINC`< 0.

KNTR had an improbable error in determining end points of line segments that would cause an excessively long line to be drawn on rare occasions. Long straight lines were drawn with many short segments, making plot files 10–40% too large. Formats were made large enough to handle more general plots.

PRTUV has a new option to print random parameter values rather than the data.

VPLOT was corrected for errors computing models for VLA data and models at time-averaged data samples.

IMEAN attempts to fit the histogram of noise to determine the true rms. Bad user inputs or initial guesses can cause the fitting to fail; additional tests to recognize this failure were added.

Tick mark routines failed to return an error alerting the task to skip the tick plotting in some cases leading to rather messed up plots.

EXTLIST was corrected for `KNTR` and `PCNTR`.

Programmer tidbits

Y2K A new test suite similar to `DDT` has been developed. The `LARGE` test in this suite is about an order of magnitude more demanding than the `LARGE DDT` test. `IMAGR` has replaced `UVMAP` and `MX` in the new tests. *AIPS* Memo No. 104 was written to document the new test; for information see below and the *AIPS* Web pages.

MAXIF The maximum number of "IFs" allowed in *AIPS* has been raised from 28 to 90. This change exposed some programs that, for ease of coding, simply dimensioned already large arrays with an extra `MAXIF`. The increase added 20 to more than 30 Mbytes to some tasks. With judicious recoding and use of dynamic memory, these tasks (*e.g.*, `APCAL`, `FLGIT`, `IBLED`) were made significantly smaller than they were before the increase in `MAXIF`.

AP tasks FRING can have enormous memory requirements for use by the "AP" subroutines. These routines perform their operations on ranges of subscripts in the large COMMON array called APCORE. Since these "Q" routines all take subscript values for arguments, one can allocate dynamic memory relative to APCORE and send the dynamic memory subscripts to these routines rather than using only pre-allocated memory. This means that the worst-case situations in FRING do not need to control how much "AP" memory is compiled into all the other "AP" tasks (*e.g.*, IMAGR and CALIB).

Errors It was discovered that certain error codes returned from low-level routines were being ignored systematically. This is a very bad idea and meant that a programming error that should have been found quickly without problems damaged a number of users' data sets.

Counters In the old days, counters in *AIPS* had to be REALs if their values exceeded 32767. Now, counters must be INTEGERs since REALs cannot count by 1 past 16777215.

PPC *AIPS* may now be used on PowerMac G3 and G4 systems running Linux/PPC. Much of the porting work was done by Craig Lewis and Chris Flatters finished it off.

VLA flux scale updated — SETJY

Rick Perley and Greg Taylor have derived new coefficients to be used in deriving flux densities of primary flux calibrators at the VLA. The flux densities shown in the table for frequencies below 10 GHz are based on the Baars *et al.* value for 3C295. For frequencies above 10 GHz, the flux densities are based on a model of Mars, provided by Bryan Butler. The values shown for 3C295 above 10 GHz are based on the Mars model — agreement with the Baars *et al.* scale is better than 1% at 15 GHz. The values shown for Mars below 10 GHz are based on the Baars *et al.* scale, and agree with the model to within 4% at all frequencies. There are significant discrepancies between these scales at Q-band (43 GHz), which is not surprising. More worrisome is that the measured flux density of the planetary nebula NGC7027, using the Mars-based scale, is 8% below that expected from extrapolating the 15 GHz value, where it is known to be optically thin, with the expected −0.1 spectral slope. The origin of this discrepancy is not understood, and users must treat the 43 GHz flux density scale with suitable scepticism. The new numbers make a significant change in the flux scale at the high frequencies. What follows is an excerpt from the revised VLA Calibrator Manual:

"Since the planets and 3C295 are too heavily resolved for most VLA observing programs, the flux density of a small set of calibrators is carefully measured with respect to 3C295 and the planets in the "D" configuration every few years. These more compact sources have been found to be only slowly variable (with some exceptions at the highest frequencies). Below we provide the current (1999.2) best analytic expression for their flux densities.

$$\log S = A + B \log \nu + C(\log \nu)^2 + D(\log \nu)^3$$

where S is the flux density in Jy and ν is the frequency in GHz. These expressions are valid between 300 MHz and 50 GHz.

Source	A	B	C	D
3C48	1.31752	−0.74090	−0.16708	+0.01525
3C138	1.00761	−0.55629	−0.11134	−0.01460
3C147	1.44856	−0.67252	−0.21124	+0.04077
3C286	1.23734	−0.43276	−0.14223	+0.00345
3C295	1.46744	−0.77350	−0.25912	+0.00752

The 31DEC00 version of *AIPS* program SETJY with OPTYP = 'CALC' and APARM(2) = 0 (the default) will calculate and insert the flux densities based on the above expression and parameters into a VLA database. Alternatively, SETJY can be told to use the old Baars *et al.* (1977) expression and parameters, or the 1995.2, or 1990 coefficients. *AIPS* versions 15OCT89 through 15JAN96 use the 1989.9 coefficients or the Baars coefficients. With versions of *AIPS* prior to 15OCT89, the flux density of the calibrators must be set with OPTYP = ' ' for each IF. Do not use SETJY with OPTYPE 'CALC' if you are switching frequencies within the observing run. In this case you must calculate and insert the appropriate values for each frequency and IF with OPTYP = ' '. You may find it more convenient to split the databases into single FQid components."

New AIPS Installation Wizard

The previous *AIPSLetter* described our plans for a new installation script or "*wizard*" with the promise that it would be available soon. At the time of writing, it is available through the `31DEC00` web page, and a separate ChangeLog for the script has been created (one cannot rely on fixes through the Midnight Job for this script anymore than one can rely on a cart to pull a horse).

The main weaknesses of the script to date are that the automatic fetching of the `31DEC00.tar.gz` file — which only kicks in if you have not already downloaded it — is not working, and that the in-built help and documentation within the wizard needs some improvement. Additionally, there is some (understandable) confusion generated when following the instructions to prime the ssh key, specifically when you are asked to issue the "`ssh-add -D`" command. This command will remove all stored identities in any running SSH agent, but it issues an error message if there is no agent running. This message can be safely ignored!

For those of you who have contributed feedback on the wizard, thank you and rest assured we will attempt to fix any weaknesses you have pointed out.

AIPS Distribution

By December 18, 2000, 449 sites have taken copies of `31DEC00` (407 of them as `31DEC99`), via ftp. Of these, 22 sites took copies on more than one occasion. A few of the sites have begun taking updates regularly via the "midnight job." We recommend this to all serious *AIPS* users. Of the 64 sites registering, a remarkable 54% of the installations were done under Linux. The primary architecture at 77% of these sites was Linux.

The distribution of `15OCT99` has been terminated. A total of 382 copies of the `15OCT99` release were distributed to 348 non-NRAO sites. Of these, 165 were in source code form and 217 were distributed as binary executables. The figures on computers using *AIPS* are affected by the percentage of *AIPS* users that register with NRAO. Of 348 non-NRAO sites receiving `15OCT99` only 57 (16%!!) have registered. For 31DEC00, the preliminary numbers are 64 of 449. We remind serious *AIPS* users that registration is expected in order to receive user support. The first table below shows the breakdown of how the (frozen) copies of `15OCT99` and (preliminary) copies of `31DEC00` were distributed. The second table below is based on the disappointing number of registered installations of the various releases. It indicates that the distribution over operating systems was heavily weighted toward Solaris previously, but that Linux is now preferred. However, when asked about "primary" architecture, 49% of our users answered Linux for `15OCT99` (77% for `31DEC00`) and 32% (19%) answered some flavor of Sun OS. Linux has, for the moment, won.

	ftp	CDrom	8mm	4mm	ZIP	Floppy
15OCT98	242	71	8	1	0	0
15APR99	290	69	0	2	0	0
15OCT99	277	102	1	2	0	0
31DEC00	449	-	-	-	-	-

OS	31DEC00 %	15OCT99 %	15APR99 %	15OCT98 %	15APR98 %	15OCT97 %	15APR97 %	15OCT96 %
PC Linux	54	33	27	27	19	23	16	19
Solaris	38	54	53	61	66	50	66	46
Dec Alpha	3	1	4	3	7	9	6	10
SGI	3	4	13	1	3	1	1	5
HP-UX	1	5	2	5	2	3	6	4
SunOS 4	1	1	1	1	4	14	5	13
Alpha Linux	0	1	0	0				
IBM /AIX	0	0	0	2	1	0	0	4

Recent *AIPS* and related Memoranda

The following new *AIPS* Memorandum is available from the *AIPS* home page.

104 Y2K, a new DDT, and AIPSMark$^{(00)}$ Measurements
Eric W. Greisen
September 8, 2000
The *AIPS* certification and benchmarking package known as DDT has lost its usefulness as computers have become faster. A similar package, called Y2K, has been constructed to use the *AIPS* imaging tasks now in greatest favor on a significantly larger problem. This should let us keep up with computer development for a few years. In this Memo I present the results of performance tests made with the 31DEC00 release of *AIPS* using both the old DDT and new Y2K on a variety of computer architectures. A new "*AIPS* Mark" is defined.

The following VLBA Scientific Memo is available from the Web page
`http://www.aoc.nrao.edu/vlba/html/MEMOS/scimemos.html`

25 A Step-by-Step Guide to VLBA Data Calibration in *AIPS*
Jim Ulvestad
August 14, 2000
This memo provides a step-by-step guide to calibrating many types of VLBA experiments. Continuum strong-sources or phase-referencing observations are included, as are simple spectral-line observations. The memo applies specifically to VLBA-only data sets, but includes an appendix describing modifications for VLBA+VLA data sets. It may be used (with some modifications in loading amplitude data) for data sets containing other antennæ.

Patch Distribution for 15OCT99

As before, important bug fixes and selected improvements in 15OCT99 can be downloaded via the Web beginning at: `http://www.cv.nrao.edu/aips/patch.html` Alternatively one can use *anonymous* `ftp` on the NRAO cpu `aips.nrao.edu`. Documentation about patches to a release is placed in the anonymous-ftp area `pub/aips/`*release-name* and the code is placed in suitable subdirectories below this. The 15OCT99 release had a few important patches including a new one in August. These were:

1. DBCON fails combining data sets with different numbers of polarizations. 1999-11-23.
2. IMAGR fails when gridding large fields after gridding small fields. 1999-12-14
3. IMAGR fails when filtering Clean components for large fields. 2000-02-04
4. FITAB would overwrite the incoming *uv* data file when sorting tables to time order. 2000-08-07

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