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A newsletter for users of the NRAO
Astronomical Image Processing System

Written by a cast of *AIPS*

Edited by

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General developments in *AIPS*

Staff

In August, 1996 Dave Adler accepted an offer from the Space Telescope Science Institute and left the *AIPS* group. Staff and visitors at the AOC will remember Dave as a very helpful and knowledgeable first point of contact for all *AIPS* related questions. Dave also was responsible for keeping in running order what has to be one of the most complex *AIPS* installations. In May, 1997, Athol Kemball moved to the AIPS++ project. In the past years, Athol has greatly contributed to *AIPS*, in particular to VLBA and Space VLBI applications. We are fortunate that Athol will still be available for consulting on *AIPS* matters. We wish both Dave and Athol good luck in their new endeavors.

Current release

The `15APR97` release of Classic *AIPS* is now available. It may be obtained via *anonymous* ftp or by contacting Ernie Allen at the address given in the masthead. *AIPS* is now copyright ©1995, 1996, 1997 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*. Details on how to obtain *AIPS* under the new licensing system appear later in this *AIPSLetter*.

A total of 222 copies of the `15OCT96` release were distributed, of which 114 were in source code form and 108 were distributed as binary executables. The table below shows the breakdown of how these copies were distributed. This includes both source code distributions and binary distributions. The latter method is gaining popularity quickly: 54 % of all distributions include binaries.

ftp	8mm	4mm	QIC	Floppy
198	16	7	1	0

User feedback suggests that the distribution over operating systems for installed versions of `15OCT96` was as follows:

Operating System	No.	`15APR97` %	`15OCT96` %
Solaris/SunOS 5	228	46	50
PC Linux	92	19	7
SunOS 4	63	13	22
Dec Alpha	48	10	8
SGI	24	5	5
IBM /AIX	22	4	3
HP-UX	18	4	3
Ultrix	1	0	1
Total	496		

The percentage for the previous release is given in the last column. The rapidly rising popularity of PC Linux is obvious. Solaris/SunOS 5 appears to have made significant gains over SunOS 4 since the last release. These figures are affected by the percentage of *AIPS* users that register with NRAO. For `15OCT96`, though the number of *AIPS* shipments remained essentially unchanged, we noticed a pronounced drop in the number of sites that registered. We remind serious *AIPS* users that registration is required in order to receive user support.
The next release of *AIPS* will be `15OCT97`.

Delay in `15APR97`

The `15APR97` version of *AIPS* is focused on space VLBI applications. This arises from NRAO's commitment to fully support, within *AIPS*, the reduction of data taken with the HALCA satellite.

In April, 1997 we decided to delay the official release of `15APR97` to the summer of 1997, to accommodate the shift in the launch schedule and the start of in-orbit checkout (IOC) observations. HALCA was launched on 12 February 1997, and the first scientific data were taken around early April. Although by then almost all Space VLBI related software was already available in *AIPS*, we decided to postpone the release until we had had the chance to use this software at least once on real data. This became possible in May and June as fringes were found, followed by a complete pass of HALCA data through *AIPS*, resulting in a map. Though many aspects of Space VLBI specific software remain untested under real circumstances, these first successful results are very encouraging. In the next release, `15OCT97`, we expect to ship Space VLBI application software with additional features and enhanced robustness.

Future plans

The two positions in the *AIPS* group that have been lost will not be filled again. This is partly due to a general trend of trying to cope with leaner budgets, and partly due to the increasing shift of focus of NRAO application development from *AIPS* to AIPS++. For the foreseeable future, however, we intend to continue releasing new versions of *AIPS* on a 6 month time scale.

System Support

printers Users can now change their printer on the fly from within *AIPS*, if you have more than one printer defined in `PRDEVS.LIST`. If you have multiple versions of *AIPS*, this requires copying the new `$SYSUNIX` versions of `ZLPCL2` and `ZLASCL` to all older `$SYSUNIX` areas.

CAD There is a system utility called `CAD` (a shell script in `$SYSUNIX`) that may come in useful in the event of data or catalog corruption problems (*e.g.*, if your system crashes and the disk is compromised). It offers what is hopefully good advice on the shape of a given user's catalog in a specific data area.

tapes/Linux The tape drive code for Linux has had a good workout, and now correctly sets block sizes and densities for Exabytes and DAT drives.

`AIPS_ROOT` `$SYSUNIX/TVDEVS.SH` and `START_AIPS` no longer expand the $AIPS_ROOT variable before performing any remote shell command. In a heterogeneous environment with possibly different $AIPS_ROOT values, doing so was causing problems. This requires users to have $AIPS_ROOT defined in their environment when performing a remote shell (`rsh` or `remsh`) command (defined at the remote system), and thus some startup script changes may be needed at your site.

network names Using network service names in upper case letters has been found to precipitate bugs in certain operating systems. In particular, a NIS/YP server running SunOS 5.5 was found to reject connects for service names (in getservbyname) in uppercase. All services are now expected to be in lowercase.

SGI drives Better support for SGI tape drives under Irix 6 has been implemented; the older Z routines that were built for Irix 5 are deprecated but still available.

debuggers A new utility is provided that allows a user to switch debuggers on the fly within an `aips` session. The source for this utility is in `$SYSUNIX /DBGWRAP.C` and documentation in `$SYSUNIX/DBGWRAP.DOC`. It is not built as part of the normal installation procedure.

Improvements for users in `15APR97`

Model-fitting — 1 - `SLIME`

`SLIME` is an interactive model-fitting program for *AIPS* that allows the user to construct and edit models by manipulating a graphical representation of the model. It is primarily intended for use with VLBI data.

The current version of `SLIME` is Version 2.0.0. If you are running an earlier version then you must switch to the new version for the `15APR97` release of *AIPS*. To obtain `SLIME` you should go to the `SLIME` homepage at `http://www.nrao.edu/~cflatter/slime.html` and download the appropriate distribution package for your workstation (`SLIME` is currently available only for SPARC-based systems running Solaris 2.4 or later and ALPHA/AXP-based systems running Digital UNIX 4.0). Each distribution package contains a precompiled version of `SLIME` and a script that will install it into a pre-existing *AIPS* installation as an *AIPS* task.

Model-fitting — 2 - `OMFIT`

`OMFIT`, one of three UV model fitting tasks in AIPS, has been improved considerably in `15APR97`. Several new models have been added including optically thin spheres, rings, and disks with limb darkening. Other improvements include improved convergence criteria, inclusion of the w-term, a rewrite of the HELP file, and better error-bar analysis. Due to limitations of the AIX fortran compiler, `OMFIT` now compiles without optimization on IBM architectures. `OMFIT` is still under development and details of features currently being implemented can be found at `http://www.nrao.edu/~kdesai` or by contacting `kdesai@nrao.edu`.

Elevation interpolation

The elevation interpolation task `ELINT` underwent a series of improvements for this release. New `OPTYPE` options were added to allow fitting for atmospheric opacity (following a law of the form exp(-tau/cos z)) as well as for the gain. This option can be useful in situations of high optical depth (such as at the upper end of Q-band, or a soaking wet day at K-band). The task can also now deal with elevation ranges exceeding 90 degrees, when antennas observe "over-the-top". The fitted polynomial can now take two forms: i) three coefficients of the polynomial; ii) three coefficients which determine position and value of minimum correction (maximum gain).

GPS ionospheric data

We are currently experimenting with the use of dual-frequency measurements to estimate the ionospheric electron content and the ionospheric Faraday rotation at the VLA. The new *AIPS* task `LDGPS` is used to load GPS data and to correct it for known clock offsets. The corrected data is used by the task `GPSDL` (GPS DeLay) to calculate Faraday rotation corrections for polarization data.

It should be emphasized that this is still an experimental system and that GPS data is not automatically available. Anyone who is interested in trying this system should consult with Alan Roy (`aroy@nrao.edu`) to determine the current status of this system and to arrange for the necessary data to be recorded. This should be done before the experiment is observed.

VLBI DDT test

Work on VLBI and Space VLBI testing using simulated data have continued since the last release, and a new VLBI DDT test script is now available. The simulated data are generated using task `DTSIM`, which can apply pre-fringe fitting calibration errors, including amplitude, phase, polarization and bandpass errors. Source models can also be specified. Test compliance is checked using `DTCHK` which reads calibration tables or checks the uv-data directly. The DDT script is called `VLBDDT`, and further information can be obtained by typing `EXPLAIN VLBDDT`.

Software ported from CVX

Several pieces of software were ported from CVX, the experimental version of *AIPS*. They include:

`EDITA` This is a new TV task to edit uv data based on calibration tables.

`EDITR` This new task allows interactive editing using a display of up to 10 baselines to a single antenna and that allows editing based on a secondary dataset (*e.g.*, residual visibilities).

`SCMAP` The "Edit Data" menu command was implemented, and `APARM(9)` was added to give the averaging time for data editing.

Miscellaneous Developments and Improvements

`UVPLT` `UVPLT` can now be told to generate UVW coverage plots with uniform limits in the U,V,W directions. If `BPARM = x,y,2,0` is selected, where x and y are chosen from 6,7,8 [U,V,W respectively], then the plot is generated with identical limits along the X and Y axes.

`SPLIT` `SPLIT` now preserves the values of the rest frequency `RESTFQ` and the LSR velocity `LSRVEL`. Previously, they had to be set by hand after running `SPLIT`.

`SNSMO` `SNSMO` now allows smoothing of tables attached to single source files, and the new smoothing option `'DELA'` specifies smoothing of delays only. A feature was added to control whether existing flagged solution entries are interpolated, and a bug was fixed that caused phase always to be re-referenced whereas delay and rate were only re-referenced for VLBI and VLMB smoothing modes. This allowed the possibility of partial re-referencing. Another re-referencing bug that was corrected affected multi-IF calibration tables for the second secondary reference antenna and above.

`INDXR` A bug was fixed in the routine that evaluates delay polynomials in the `IM` table, and shifts them to the `CL` table. This fix gets rid of the `GETDEL` error messages that were seen occasionally due to a small number of VLBA records being more than 2 minutes from an `IM` entry at the end of correlator jobs.

bandpasses Autocorrelation data can now be corrected by cross-power bandpasses for polynomial bandpass solutions. Previously, this case would be trapped, and the task would halt with an appropriate error message.

`PARALLEL` A `PARALLEL` verb was added to *AIPS*. This verb controls the number of processors that will be used for *AIPS* tasks that have been compiled with multiprocessor support. In the near future, we hope to add multiprocessor support to a few selected tasks.

`IBLED` `IBLED` was modified to allow an overlay plot of model amplitude as derived from an external CLEAN component table. This plot can be selected or de-selected using a new `"PLOT MODEL"` option of the left-hand menu. The model plotting supports multi-field data, and is useful for editing gravitational lens datasets in particular.

`IRING` Two options were added: a) plotting the cumulative intensity distribution, and b) specifying a range of azimuthal angles over which to compute the intensity distributions.

VLBI and Space VLBI specific developments

Data Loading — FITLD

Weight-based flagging was added. The implementation method is not totally general in that no `FG` table is written. Instead, data are not copied from tape to disc if the visibility weight in any IF drops below the specified threshold. `FITLD` now also writes the new spacecraft orbit (`OB`) table and writes output data using the new `correlation_id` random parameter. `FITLD` now supports reading FITS tables that are split up in 200 Mbyte chunks, as is customary for VLBA data.

Fringe fitting

`FRING` now implements the `ORIGIN` keyword for single source data files. When `CALIB` and `BPASS` run on single source files, they add the `ORIGIN` keyword to the output `SN` table. `FRING` has now been modified to do this as well.

Exhaustive fringe searching and subset solve were added to `FRING`. The FFT stage in `FRING` used to give up too easily when searching for fringes. Now, by setting `APARM(9)` $>$ `0`, `FRING` will exhaustively search all baselines, beginning with those baselines to the reference antenna specified by `REFANT`. Optionally a new control adverb called `SEARCH` can be filled in to specify the order in which to use the remaining antennas to search for fringes to antennas when `REFANT` was inadequate. The least squares stage now allows specification of a subset of antennas to solve for, *e.g.*, `ANTENNAS =1,2,3,4` to include data on all baselines between antennas $1-4$ but also use `DOFIT=1,2` to specify that solutions only be computed for antennas 1 and 2 [effectively, baselines 1-2, 1-3, 1-4, 2-3, 2-4 are used to find solutions for antennas 1 and 2]. `DOFIT=0` specifies that all antennas are solved for, as before.

Baseline stacking is now supported for multiple integration times, as required by VSOP. Sparse baselines are padded with duplicate values before the initial FFT step. Weights and the SNR calculation are adjusted accordingly.

BLING

A major improvement in this release is that `BLING` now interpolates using quadratic interpolation in delay, rate and acceleration. This has allowed the default padding to be greatly reduced so that `BLING` should be much faster than before. The user still has the option of adding extra padding using negative values of `APARM(5)` and `APARM(6)` but preliminary tests indicate that this gives little improvement in precision at a large cost in run-time.

DOFIT adverb in CALIB

The antenna subset solve feature as described above for `FRING` was also implemented in `CALIB`. As in `FRING`, the adverb `DOFIT` specifies for which antennas solutions should be determined. `DOFIT = 0` defaults to determining solutions for *all* antennas.

Ground-phasing for Space VLBI fringe-fitting

The task `GPHAS`, which averages selected baselines into a single effective baseline, and is particularly useful for Space VLBI data, received further development. New options were added for `REFANT` selection, and fixed model division. Previously the `REFANT` was created as a new virtual antenna. Now, the `REFANT` can be specified explicitly, or taken to be the most commonly occurring `REFANT` in the `CL` table. `APARM(1)=1` works as before creating a new fictitious new antenna. `APARM(1)=0` chooses the most commonly occurring reference antenna in the chosen `CL` table as the new reference antenna. `APARM(1)=2` lets the user choose via `APARM(2)` the reference antenna number. `APARM(3)` also allows the user the option to normalize the visibilities before stacking them together.

New polarization modes for VLBA

The new polarization correction modes `DOPOL=2` and `DOPOL=3` were introduced. These modes allow second order polarization corrections when using the linear D-term approximation within *AIPS*. The mode `DOPOL=3` applies more rigorous flagging, removing visibility points with any missing polarization correlation pairs. The mode `DOPOL=2` applies the same second-order correction but makes several approximations for any missing polarization correlation pairs when computing the correction matrix. The mode `DOPOL=1` makes the same first-order correction as before. The new modes are currently implemented only for VLBI polarization calibration within *AIPS*, and have no effect on other solution types (*e.g.*, VLA), though a VLA implementation may be added later. The second-order corrections have recently been shown to be important when correcting EVN data which may have individual D-term amplitudes as high as $\sim 20\%$ in isolated cases (as reported by K. Leppänen). Note that 2nd order corrections have always been applied for the orientation-ellipticity VLBI polarization model in *AIPS*.

Improved handling of external calibration files

`VLOG` is a new task to segment and re-format the external calibration file produced by the VLBA monitor and control system for each project. The resulting output files can be used directly by `ANTAB`, `APCAL`, `UVFLG` and `PCLOD` and should help to significantly automate a priori calibration for a broad range of VLBA projects. This task is VLBA-specific and makes some assumptions about the format of the input ASCII files.

`PCLOD`, the task that produces an *AIPS* `PC` table based on input data from the VLBA monitor system, was refined in several respects. The calculation of the reference frequency was revised in order to correctly take into account the frequency reference pixel. The new adverb `FQTOL` sets the tolerance used in the frequency match. The robustness when handling multi-frequency data was enhanced: `PCLOD` no longer aborts if it encounters a frequency group that does not match an `FQ-ID` in the uv file but prints a warning message and skips pulse-cal groups until it finds a frequency group that does correspond to an `FQ-ID` in the data file.

Orbit tables

Orbit (`OB`) tables were introduced to support Space VLBI data reduction, and three new tasks make use of this new table. `OBTAB` reads the `OB` table, and fills in empty columns with additional information such as angular distance to the sun, position angle of the antenna feed, etc. Optionally `OBTAB` will add the six orbital parameters to the relevant column of the `AN` table. A second new task, `OBEDT`, allows flagging of data depending on entries in the `OB` table. Finally, `OBPLT` allows various columns of the `OB` table to be plotted against each other.

New random parameter: correlation_id

For full VSOP support, it was necessary to introduce a new random parameter. The VLBA correlator can change correlation modes with great flexibility, leading to time-variable rate and delay decorrelation corrections which depend on the type of frequency and time filtering performed in the correlator. The most general solution to this problem was to implement a `correlation_id` random parameter for VLBA datasets which points to the recorded correlation modes stored in the existing `CQ` table. This change made it possible to allow time variable correlation mode changes in general, although only time variable OVLB filtering is activated at present.

new `ALIAS` adverb

A new adverb, `ALIAS`, has been introduced to facilitate the calibration of Space VLBI data. Antennas specified via the `ALIAS` adverb will be treated as identical for the purposes of certain tasks. This allows HALCA, which appears in *AIPS* as a conglomerate of tracking stations, to be calibrated as one individual antenna, and to be viewed as such for some plotting tasks.

MSORT

MSORT is a new task that reproduces the functionality of UVSRT, but is optimized for large slightly missorted datasets. MSORT does an in-memory sort of a UV-data file. At best, MSORT should be about 3 times faster than UVSRT (in case when the data is only weakly mis-sorted — as is the case for normal VLA and VLBA data). At worst MSORT should take no more than 50% longer. In either case, MSORT requires no ancillary disk space — making this the preferred sorting method for large data files.

RESEQ

RESEQ is a new task which will, via the ANTENNAS input, renumber antennas in a UV file. Space VLBI requires the ability to alias stations together at some points in the data reduction stream. This is the first step for that requirement. RESEQ will renumber all antennas specified in the ANTENNAS adverb to ANTENNAS(1), or, using INFILE, to some desired order.

CLCAL

CLCAL now allows "pass-through" calibration, as well as "proper" FQID and SOURCEID selection. By choosing 'CALP', CLCAL can now be made to pass CL table records for which no SN table record is found. This is dangerous but necessary if SN tables are constructed piecemeal as may be necessary for VSOP data. SN tables generated by single source data files and by OOP tasks may contain FQID=-1 and/or SOURCEID=0. Such entries should match ALL CL table records. This is perfectly obvious for FQIDs but a bit ambiguous for SOURCEIDs. Furthermore, the new adverb CUTOFF specifies a maximum time interval over which interpolation is to be performed.

Documentation, on-line help, and user support

Designated AIP program

We continue the designated AIP program essentially unchanged. *AIPS* user support can be obtained by the following methods:

1. E-mail to aipsmail@nrao.edu. This account is checked several times a day, and messages are forwarded within the AIPS group as appropriate.

2. Submit a gripe. This is usually done from within AIPS. Newer versions of *AIPS* (15JAN96 and later) will automatically send an e-mail message to NRAO. The gripe system should be used for less urgent matters, such as suggestions for improvement.

3. Contact the AIPS group member currently designated to provide user support. This listing is available on the WWW via

http://www.cv.nrao.edu/aips/d_aip.html

The "designated AIP" program covers all aspects of *AIPS* user support, including VLBI. Users may wish to contact individual members of the AIPS group directly if their question is of a specialized nature, and they know who in the AIPS group is the specialist in that area.

AIPS Publications and the World-Wide Web

The *World-Wide Web* (WWW) is a method for sending and receiving hypertext over the Internet network and has been made easy to use by clients such as *NCSA Mosaic, Netscape, Arena,* and *Lynx*. NRAO is among the many institutions which now offer informative Web pages and networks of additional information. The NRAO "home" page is at the Universal Resource Locator (URL) address

http://www.nrao.edu/

The *AIPS* group home page may be found from the NRAO home page or addressed directly at URL

http://www.cv.nrao.edu/aips/

This page points at basic information, news items about *AIPS*, recent *AIPSLetter*s in PostScript format, patch information for all releases after `15JAN91`, the latest *AIPS* benchmark data from various computer systems, copies of `CHANGE.DOC` for every release since `15JAN90`, *all* relevant *AIPS* Memos, *every* chapter of the *CookBook*, and all recent quarterly reports to the NSF. There is even a tool to let you browse the `15APR97` versions of all help/explain files. We recommend that you check this URL occasionally since it changes when new software patches, revised *CookBook* chapters, and new *AIPS* Memos are released.

There are two new *AIPS* Memos with this release:

Memo	Date	Title and author
93	97/01/29	Position Angle of the VSOP Antenna Feed L. Kogan, NRAO
94	97/01/29	*AIPS* Benchmarks for the Silicon Graphics Origin 200 A. Kemball & C. Flatters, NRAO

These memos are available through the WWW pages. Since some Memos are not available electronically and others do not yet have computer readable figures, you may wish to write for a paper copy of these. To do so, use an *AIPS* order form or e-mail your request to `aipsmail@nrao.edu`. If you cannot use the Web, you can still use `ftp` to retrieve the Memos, *CookBook* chapters, etc.:

1. `ftp aips.nrao.edu` (currently on `192.33.115.103`)
2. Login under user name `anonymous` and use your e-mail address as a password (*yourname*`@` will do; ftp will fill in the machine you are using).
3. `cd pub/aips/TEXT/PUBL`
4. `get AAAREADME` and read it for lots more information.
5. `get AIPSMEMO.LIST` for a full list of *AIPS* Memos.

Patch Distribution

As before, important bug fixes and selected improvements in `15APR97` can be downloaded via the Web at:

`http://www.cv.nrao.edu/aips/15APR97/patches.html`

Alternatively one can use *anonymous* `ftp` on the NRAO cpu `aips.nrao.edu` (currently located on `baboon` which is `192.33.115.103`). 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. Information on patches and how to fetch and apply them is also available through the World-Wide Web pages for *AIPS*. As bugs in `15APR97` are found, the patches will be placed in the `ftp`/Web area for `15APR97`. No matter when you receive your `15APR97` "tape," you must fetch and install these patches if you require them.

Obtaining *AIPS* under the GNU General Public License

We have decided to make *AIPS* available via anonymous ftp under the GNU General Public License, the meaning of which was spelled out in the `15JUL95` *AIPSLetter*. The installation of *AIPS* will now proceed something like the following example:

We assume that you have created an account for *AIPS* with a root directory called `/AIPS`. Then do

```
home_prompt<601> cd /AIPS
home_prompt<602> ftp aips.nrao.edu
Connected to baboon.cv.nrao.edu.
220 baboon FTP server (Version wu-2.4(1) Fri Apr 15 12:08:14 EDT 1994) ready.
Name (aips.nrao.cv:johndoe): anonymous
331 Guest login ok, send your complete e-mail address as password.
Password: johndoe@nrao.edu
230- This is the National Radio Astronomy Observatory ftp server for the
230- AIPS, AIPS++, and FIRST projects.  Your access from primate.cv.nrao.edu
230- has been logged, and all file transfers will be recorded.  If you do not
230- like this, type "quit" now.  Counting you there are 1 (max 20) ftp users.
230-
230- Current time in Charlottesville, Virginia is Mon Jan 18 10:18:46 1996.
230-
230-
230-Please read the file README
230-  it was last modified on Wed Mar  8 14:01:24 1995 - 316 days ago
230 Guest login ok, access restrictions apply.
ftp> cd aips/15APR97
250 CWD command successful.
ftp> get README
200 PORT command successful.
150 Opening ASCII mode data connection for README (nnnn bytes).
226 Transfer complete.
local: README remote: README
nnnn bytes received in T seconds (5 Kbytes/s)
ftp> get INSTALL.PS
200 PORT command successful.
150 Opening ASCII mode data connection for INSTALL.PS (mmmmm bytes).
226 Transfer complete.
local: INSTALL.PS remote: INSTALL.PS
mmmmm bytes received in TT seconds (5 Kbytes/s)
ftp> binary
200 Type set to I.
ftp> hash
Hash mark printing on (8192 bytes/hash mark).
ftp> get 15APR97.tar.gz
200 PORT command successful.
150 Opening ASCII mode data connection for 15APR97.tar.gz ( bytes).
226 Transfer complete.
local: 15APR97.tar.gz remote: 15APR97.tar.gz
mmmmm bytes received in TTTTT seconds (5 Kbytes/s)
ftp> quit
221 Goodbye.
```

You should type in your full e-mail address (not `johndoe@nrao.edu`) at the password prompt. The `hash` command is optional and may be inappropriate in some versions of ftp; it does give a useful indication of progress in the long `get` in most versions. If you do not have the GNU file compression code (`gzip`), you should `get 15APR97.tar`. Our ftp server will uncompress the gzipped file automatically. (It would be around 3 times faster if you had `gzip`.)

At this point you should read the `README` file to review the latest changes, if any, affecting your installation of *AIPS*. You should print out the `INSTALL.PS` PostScript document and read at least its overview section.

To create the rest of the /AIPS directory tree, and fill it with the *AIPS* source code

```
cd /AIPS
zcat 15APR97.tar.gz | tar xvf -
                or
tar xvf 15APR97.tar
```

depending on whether you fetched the source file with compression or without.

If you want to get the binary version(s) of *AIPS*, you should read the README file for further directions. They will tell you about a procedure to run from the INSTEP1 installation procedure and/or at a later time which will initiate a second ftp session to fetch the appropriate contents from the $LOAD, $LIBR, MEMORY, BIN, and DA00 areas. You may run this procedure more than once if you need to fetch binaries for more than one architecture. You may also have to run portions of this procedure "by hand" if you encounter reliability problems with the network.

You will then have to run the INSTEP1 procedure, as usual, to tell your *AIPS* about your computer environment. A new part of INSTEP1 is its offer to assist you in "registering" your copy of *AIPS*. It will help you complete a registration form and will even e-mail it to us if you want. When we get a registration request, we will enter your information in our user data base and reply with instructions and registration numeric "keys" which you may use to complete the registration process (using SETPAR and SETSP). This may seem cumbersome and onerous, but we have two reasons for doing this. The first reason is to provide us with information about the use of *AIPS*. This information is useful to us to justify, to management and funding agencies, our existence and our need for more employees or computers or disk or whatever. The second reason is a concern about excessive demands on our employees' limited time to provide assistance to sites in installing and running the software. If an excessive demand should arise, information from the registration process will allow us to set priorities among the different sites. This registration is entirely optional. We will use transaction logging in ftp and, hence, know which sites have fetched the code. We will assume that sites which do not register are not "serious" in their use of *AIPS* and we will be unable to provide any assistance to unregistered sites (except, of course, to help them register). This means that unregistered sites will receive no assistance in installing *AIPS* and users at those sites will receive no assistance in using *AIPS*, including no printed literature. All serious sites are strongly encouraged to register since registration statistics are used to determine the level of effort that NRAO can provide for the Classic *AIPS* project. The statistics are also used to obtain assistance from computer vendors.

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CookBook errata

If you are reducing polarization data, please note that the phase offset corrections given on Page 4-32 are in error. The correct values for the R-L phase difference (twice the position angle of the electric vector) are as follows.

Calibrator	angle	band
3C286	66 degrees	all wavelengths
3C138	-18 degrees	L-band
	-24 degrees	all other bands
3C48	do not use	L-band
	-150 degrees	C-band
	-131 degrees	shorter wavelengths

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