

The AIPS Wishlist

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13 February 1987

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INTRODUCTION

I have been asked to convert the normal "Wishlist" maintained for *AIPS* into a document for discussion. In particular, I have attempted to assign some priorities to things. This is somewhat hard to do since some items are normally low priority but can become temporarily important for some reason. Others are intrinsically low priority, but, because they are easy or are part of a program being changed for other reasons, are more likely to get done. Rather than assign simple numbers to priorities, I have attempted to describe these other considerations.

I have added "**" before those items which I think are likely to be done in the next year and "??" before those upon which work might be done in the next year. Items not falling into one of these categories, are preceded by "." to make their lower priority more visible. I have also added tentative assignments. In general, I have taken on more in these than I can realistically do. It is my intention in some of these to do some detailed design plans and then to ask someone else to complete the coding.

Since its initial preparation as a public document, the Wishlist has undergone numerous changes and is being published periodically as an *AIPS* Memo. The last such was published 30-April-1986 as *AIPS* Memo No. 45. Items which have been added or revised since the last publication are marked "Nx" or "nx" (where "x" is " ", "?", "*", or "." and "N" means new and "n" means revised in a minor way) in the next publication. Similarly, items which have been completed, one way or another, since the last publication are marked with a "Dx". I hope that these conventions and the \TeX setting will make the changes in the document and the developments in *AIPS* easier to follow.

Numbers in parentheses in the text are references to gripes on the particular subject which provide additional comments expanding on the necessarily brief descriptions appearing in this document. The text of the gripes is found in DOCGRIP: on the Charlottesville VAX. In addition, notebooks containing the gripes are in the *AIPS* Caiges at the VLA and in Charlottesville.

Some responses to the *AIPS* Priorities meeting of 4 February 1987 are incorporated into this document.

GENERAL MAINTENANCE

These items normally do not require much continuous effort. However, when they need doing, they receive more or less top priority.

1. ** Source code/library maintenance, version updating (all)
2. ** *AIPSLLETTER*:
 - ** writing (Eric, Don, Alan)
 - ** type setting (Eric)
 - ** mailing (Nancy)
3. ** Gripes:
 - ** receipt (Nancy)
 - ** initial review (Eric)
 - ** first-pass responses (all)
 - ** "to-be-continued" (Nancy, all)
4. ** *COOKBOOK*:
 - ** maintain, publish (Eric, Alan, Nancy)
 - ** some instructions for UNIX installations (Kerry)
5. ** *GOING AIPS*:
 - ** maintain, publish (Bill, All)
 - n* check (for 15APR87) including
 - D? new *DCH.INC files and other *.INCs
 - D? new directory structure: general
 - D? new directory structure: Y, Q aspects
 - n* proof and correct 15APR87 edition
 - n* rewrite Y chapter for this edition (Eric)
6. ** Certification and Benchmarking Package (DDT) (Eric, Don)
 - D* 15JUL86 version, data and procedures
 - N* 15APR87 version, data and procedures
7. ** *AIPS* Site Survey (Don, Nancy, Alan)
 - D* organize files of all correspondence with users and sites (Nancy).
 - DN prepare and mail "1986" survey
 - N* analyze returns from 1986 survey
8. ** Source code export (all)
 - N* Several suggested improvements (2152-2160)
9. ** Simple bug corrections (all)

PROJECTS IN PROGRESS

These items do not require a high level of effort at this time. However, they are important and will be assigned all the man power needed to complete them in a timely fashion.

1. ** Code development and debugging: (Eric, Kerry)
 - D* develop system for maintaining all code levels at VLA as well as in CV
 - D* extend system to maintain all code levels on the Convex as well as on CVAX
 - N* extend system to maintain all code levels on VLA Convex as well as on CV Convex
 - ** extend system to maintain all NEW code in Cray version
 - N* REMOVE/PUTBCK to delete from object libraries when needed
2. ** Cray Project:
 - ** write Y's for TV by wire (Eric, Don)
 - ** special AP package: continue testing (Bill, Don, Kerry)
 - ** move to 15APR87 release (?? — Kerry)
 - N* develop remote device handling: terminal, tape, TV (Don)
 - N* install under Westinghouse COS at Pittsburgh (Kerry)
 - N* export to "vanilla COS" sites (Kerry)
3. ** VAX speed up:
 - ** try /OPTIMIZE and debug it this time (if possible)
 - D* "midnight" job on new directories, multiple CPUs (Pat, Gary, Kerry)
 - ?? try shared-image libraries and load modules
 - .. speed up pseudo-AP (beyond /OPTIMIZE) ?
4. ** Calibration and Editing project:
 - ** system support (Bill, Eric)
 - D* format design (Bill)
 - D* fundamental service routines (Bill)
 - n* improve the user interface (Bill, Alan)
5. ** UNIX Project:
 - D* convert Z's for 15JUL86 (Kerry, Gary)
 - D* convert procedures for 15JUL86 (Kerry, Gary)
 - DN convert installation procs for 15JUL86 (Kerry)
 - ** clean up Z's (Kerry)
6. ** Image storage unit and control panel: (Arnold)
7. ?? Portability improvements
 - ?? Remove complex arithmetic wherever possible (Bill, whoever)
 - ** Check VAX Z routines for more detailed comments and clarity (Kerry, Eric)
 - .. Make more Z routines generic — maybe not Z afterwards (Kerry, Eric)
 - D* Implement "path" concept of hierarchal host- and device-dependent libraries: partly done,
 - D* needs UNIX
 - ?? Go to ANSI-standard Fortran 77 (Eric)
 - ?? All variables, including in Z's, to standard
 - ?? ENCODE to in-core WRITE
 - ?? Hollerith to CHARACTER where possible
 - ?? Use intrinsic functions without mixed mode
 - ?? Turn on ANSI-standard switch in CVAX compilations
 - ?? Better segregation of device-specific code: tape, TKs, ... (Eric)
8. .. Add EXPLAIN files (non-programmers)
 - .. UVSEN (Tim)
 - .. XGAUS, BLANK, et al.
 - .. Many others

- 9. ?? Mysterious, non-repeatable problems
 - ?? AP hangs up — maybe controller problem
 - D? Garbaged data on disk — VLA Unibus timing?
 - N? Tektronix 4012 cursor reading on the Convex
 - N? I²S interactive verbs hang CV Convex
- 10. N* Add IVAS to *AIPS*
 - DN Develop Y routines under VMS
 - N* Bring up on CV Convex

SYSTEM IMPROVEMENTS

These items are harder to prioritize because they tend to be system wide in their impact. We can get along for a while without doing them, but the work of doing them will then grow with time. They tend to be fairly easy to do, but to take some time because they are spread out over many modules. Also, some of them cannot be done a bit at a time since they involve converting all routines which call some routine (for example).

Higher priority:

- 1. ** Get new Z routines into everything: (Eric, all)
 - ** ZFIO, ZMIO
 - ** NSPG (in ZEXPNDs)
 - .. ZEXPND — make Zs and insert (???? -new needed ?)
- 2. ** Get complete control over map format (Eric, all)
 - D* Locate all tasks which can read only integer or write integer
 - D* Convert them to handle only floating
 - ** Fully remove integer from more flexible routines
- 3. ** Other temporary things removed: (Eric)
 - ** MINIT, MDISK, MINSK, MSKIP
 - ** COMOFF, FSWTCH
 - ** INTYPE, IN2TYPE, IN3TYPE
- 4. ?? Backups of data to be faster and more selective
 - D* VAX BACKUP (*i.e.*, host dependent) to allow file selection on write (Don)
 - D* VAX BACKUP (restore mode) to allow file selection, insertion in directory (Don)
 - D* FITTP, IMLOD to do tables faster
 - D* Fast tar backup for Unix machines (Don)
 - N? Improve speed of BAKTP, BAKLD on UNIX (Don)
- 5. .. Intertask communication:
 - ** priority and CPU limit adverbs
 - D* level 1: leave "message" to APCLN, MX to quit at next major loop, etc.
 - N* Add SHOW and TELL to more tasks
 - .. level 2: return adverbs.
 - .. spawn and attach operations (? see Gripe 1421)
 - .. save ephemeral results in file and pick up in *POPS*

6. ** Go over all AP tasks:
 - ?? Develop better queue for AP — ASCAL admit it's done
 - ** Do they close the AP whenever possible (VM *et al.* suspect, also VBFIT)? (Bill)
 - ** Do they all use the roller where it might be needed? (Bill)
 - ?? Why does FPS AP hang up sometimes? (Bill)
7. n. Gain files to standard Table type or replace: (Bill, Phil)
 - .. fix ASCAL, VBFIT (Bill)
 - .. fix ASCOR, VBCOR, VSCAL (Bill)
 - .. fix GNPLT, PRTGA (Bill)
 - D* fix FITTP, IMLOD, UVLOD to handle them
 - D* all tasks which copy gain files (Bill, whoever)
8. .. Extend uv format to include linear polarization (Bill, Eric)
9. ** Remove INTYPE except where required (Eric, whoever)
10. ?? Debate default on OUTDISK = 0 re private packs. (Eric)
11. ** Tape dummy files (Eric, Kerry)
 - ?? Keep track of current tape position (Eric, Kerry)
 - ** Rename from TA to something else
12. ** Standardize KEYIN package of subroutines (Bill near done, Eric)
13. ?? Reduce global adverb conflict problems (Eric, whoever)
14. N? Under VMS, page full locks terminal (2475, 2480)
15. .. Code revisions:
 - .. Make update installation easier
 - .. Change TST/NEW/OLD nomenclature to date names ????
 - .. Paraforms for reading more than one image
 - .. GTPARM use Help file to get parms by name from TD file ????
 - .. Allow subdirectories in user catalogs ????
 - .. User catalogs to carry total file size ????

Lower Priority: Display

1. .. Printing tasks:
 - ?? PRTIM: change FACTOR to physical units / printed integer
 - N. UVFND: add opcode to display flagged data
2. ?? Star positions on plots (Eric, Don)
 - DN Task to read RUN file to star table (Eric)
 - n? Add search of star catalogs to STARS (Eric, Don)
 - D? Subroutine to plot star table (Eric)
3. ?? Clean beams on plots (Eric?)
4. .. Adverb to limit plot file size: die if too much plot ?
5. .. UVPLT to average channels
 - ?? Binning options like IMVIM
6. ** Plotting
 - D* error in GINIT disk space error message
 - N. Plot labels overlap, fix TKPL, TVPL, QMSPL to try to avoid (Eric)
 - N? ASPMM message appears even when using input value
 - N? Coordinate routines can abort on bad coordinates (2438)

7. N. Disk space problems
 - N. Seek disk with room for print files in line printer and QMSPL

Lower Priority: User Documentation

1. ** Miscellaneous:
 - ** advertise 6250 bpi better (Cookbook, Helps, ...) (Eric)
 - ** Volume 2: what's left? Move it to Volume 3. (Eric)
 - .. Public display of HELP INDEX ??? (Eric)
 - ** Volume 1:
 - ** listing of all HELP/EXPLAINS most important, but probably ok, (Eric, Don)
 - ** discard Chapter 1, update Chapter 2, (Eric)
 - .. what needed for Chapter 3,
 - ** maybe rename as "*AIPS* User Reference Manual"? (Eric)
 - ** do the printing with final AIPLAS (Eric)

Lower Priority: Source code maintenance

1. ** MSGWRT has problems with NINTRN > 10 ?
2. .. Scratch files:
 - .. Some concept of preferred disk for scratch (???)
 - N. Some concept of scratch-only disks (???)
 - .. User number in task names (ignored sometimes, used others)?
3. ?? FUDGE, TAFFY (Eric, Bill)
 - ?? clean up declares (separate commons)
 - ?? isolate output file stuff (for easy removal)
 - ?? explain second input file better
4. .. Start standardizing things
 - .. CANDY important
 - ** Install MAT on CVAX and try it on the code
5. .. HI file access easier in WaWa package
6. ?? Review *AIPS* coding standards. (Eric)
 - ** Develop a plan for changes (if any). (Eric, Bill)
 - ** Memo re language standards (Eric)
7. ?? *AIPS* maintenance tools
 - ?? Make into verbs/tasks for user 1 only ?
 - .. COPY to be able to do format conversion like UPDATE ?

- 8. .. Documentation:
 - ?? WHATSUP and selective UPs files (Eric)
 - .. method for auto generation
 - .. install method in code
 - .. generate files
 - .. PRNTMN to pick them up
 - ?? *ATPS* Manager manual: (Eric, Kerry, Don)
 - ?? service programs
 - ?? magic places to change in code (TIMDEST, ...)
 - ?? System configuration recommendations
 - ?? implementing various peripherals
 - ?? *ATPS* memos to be finalized:
 - ?? Use of EMACS editor with *ATPS* files (Don)
 - ?? Mailing List Package (Don)
 - ?? Checkout System
 - .. XREFS:
 - .. Vax version of XREFS
 - .. Vax cross reference by task rather than individual module
- 9. ?? Havlen/Fomalont "DEMO" image file? (Eric)
 - ?? under the mythical user number 1? (Eric)

TASKS

These are tasks which are likely to be a lot of work, but they will require only one person at a time per task. All of these need doing.

High priority (important tasks):

- 1. ** MX (Bill)
 - N* Fails in spectral-sum mode (2089)
 - N* Locks on one component: (Convex many gripes, VAX too (2124))
 - N* Beam-patch troubles → clean divergence (2128)
 - N* Stokes V is actually Stokes I on Convex
 - N? Funny output image sizes — explain or change
 - ** Put PHAT value and # components / field in HI file — latter done
 - ** Problem with grid correction (also UVMAP) → clean failure
 - ?? Display all or selected dirty fields on TV
 - ** TXINC, TYINC option
 - ** NITER < 0 implies stop at first negative
 - ** turn off "write" flag when image is stable (and be patient about setting it busy again)
 - ?? output both clean and residual image
 - ** On NITER=0, do not set clean beam — confuses CONVL ??
 - ** Check handling of BOX — 10th unused, funny ordering, ...
 - ** Make it work with STOKES 'R' and 'L'
 - ** Drop XPARM and YPARM inputs
 - .. rename shift parameters
 - N? adapt to handle wider fields such as 327 MHz

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2. ** APCLN, SDCLN (Bill, Eric)
 - .. better beam fit (also MX)
 - ** save residuals and cleaned image option (???)
 - N. Other clean-area options, *i.e.*, mask image (2489)
 - N? ignores any scaling given in header (2503)
 - N* fails if rolled in restore step ?
 - N* fails on Button D push
 3. ** UVMAP (Bill)
 - N* Produces artifacts in images on Convex (2193)?
 - .. Sum weights near center (guide for ZEROSP)
 - .. Zero spacing for multiple channels
 - ** TXINC, TYINC option
 - ** Drop XPARAM and YPARAM inputs
 4. ** ASCAL (maybe redone via Calibration package) (Bill)
 - N* Gain file open error (2126)
 - .. remove READ status on model file when done with CC file
 - .. option to feed sky coordinates for point model
 - .. summary statistics on bad solutions (*i.e.*, > 10%) and on rms, mean for each antenna/IF
 - .. self-contained plot option (???)
 - ** DDCAT option failing in VSCAL
 5. ** UVSUB (Bill)
 - ?? ignores NCOMP ???
 - D? ignores CMETHOD ???
 - N* troubles with multiple CC files (2519-2520)
 - .. point and Gaussian options
 - .. allow multiplication by model as well as division
 - ** (UVMSUB) recognize STOKES < 0 images (and matching data)
 6. ** COMB: (Eric)
 - ?? Documentation confusing (may be better a bit now)
 - N? Cannot combine partly overlapped cubes (2462) ?
 - .. Generalized operators (more than 2 images, many ops incl. FFT)
 - .. Pixel-weighted averages ...
 - .. check OPCODE list against *IPPS* operators
 7. ** RUN files:
 - D* user number 1 = Manager — provide RUN procs for transport
 - .. RUN files to/from FITS tape (requires a text file writing routine!)
 - .. Machine-independent editor for RUN files — a dream, we don't have the time
 8. ?? VM, VTESS (Tim, Bill)
 - ?? Scale clean image correctly to be usable initial guess
 - N? VTESS leaves image status set
 9. N? CCMERG — improve handling of flagged components (Eric)
 - N? Message to reflect number unflagged in/out
 - N? Message to say omitted (or lost) number components due to flags

10. .. IMLOD, UVLOD, FITTP, PRTP (Bill, Eric)
 - N* FITTP to write 32-bit integer
 - DN FITTP to write long blocks
 - N* FITTP to write 32-bit floating
 - N* IMLOD and UVLOD to read long blocks, floating
 - DN FITTP fails to write CC file when it should sometimes (2228)
 - N. FITTP: add "verify" option
 - D* bug: DOTABLE fails between FITTP and UVLOD at least
 - ** bug: map processing level lost between FITTP and IMLOD on DOALL true?
 - ** bug: MX map of 0 iterations has unknown records on FITTP
 - D* change to new adverbs the BLC, TRC option (FITTP)
 - ** rename NFILES adverb to avoid conflict
 - ** DOALL option for FITS files (IMLOD done, UVLOD)
 - .. combine UVLOD and IMLOD
 - ** PRTP doesn't detect 'Pipeline' image names, IMLOD does ???
 - D* For UVLOD etc., replace SOURCE with OBJECT
 - N* UVLOD on Convex ignoring BCOUNT?
 - N. UVLOD: add *uv*-range, time range options (2505)
 - N* IMLOD fails to load all history cards
11. ?? FFT (Bill, Eric?)
 - ?? Option: output amplitude, phase images
 - ?? Option: output *uv* data base (what level to be considered 0, *i.e.*, unsampled?)
 - .. Option: clipping output to user-specified value(s)
12. N. UVFIX (Bill)
 - N. several good suggestions for code and explain (2460)
13. .. BLANK (Eric)
 - .. Option: blank other maps same as current one (*i.e.*, imag. part)
 - .. Option: non-magic and non-zero blank values
 - .. Option: fill in blanked from surround
14. .. Check times in DBCON (Doarray set for no arrays)
 - .. Correct position shift (including *u*, *v*, *w*)
 - N. Clarify or change subarray handling (2085) (Bill)
15. ?? BLOAT: generalize to build 16 chan from 2 8-chan, etc.
 - N? Add to *COOKBOOK*

New, significant tasks:

1. ** *uv* gridding task — spectral cube (Eric, ?)
 - ** Subroutine package to grid data to file in current sort
 - ** Task wrapped around to build cataloged file
 - ** Options: smoothing to grid, cell sizes
 - ** Option: real and imaginary vs amplitude and phase
2. ** Interactive (TV) visibility data editing: (Eric, Bill)
 - ** display in current sort order — use *uv* gridding
 - ** allow (software) zoom
 - ** flagging
 - ** enhancement functions (of TV display)

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3. .. Calibration and Editing project: applications software
 - D. Task to compute scan averages and rms for print and autoedit
 - N* stand-alone CLCAL task for CL table interpolation (Bill)
 - N* stand-alone CLCOR task for CL table correction (Bill)
 - DN standardized BLCAL for baseline calibration (Bill)
 - N* polarization calibration (Bill)
 - N* spectral bandpass calibration (Phil)
 - N? Task to display spectra from set of maps
 - N? Task to display spectra in *uv* plane: PASSUM
 4. ?? AIPS table files; what next: (Eric, Bill, whoever)
 - D? flag
 - D? plot
 - D? histogram
 - .. convert ≥ 1 image to table
 - ?? convert table to ≥ 1 image — see XGAUS
 - ?? translate between table and ASCII or spread-sheet formats
 - .. others: check IPPS AUTOPHOT list.
 - .. interactive editing task (spread sheet ?)
 5. ?? Dicomed tasks — DICPL, DICTV, DICTP? (Eric)
 6. .. Map vs map plotting (IMVIM):
 - .. allow rms images, plot points with error bars
 - .. binning options: convolve with rms gaussian ???
 7. ?? Improved Geometric Capabilities: (Don, Eric)
 - DN Make LGEOM work on the Convex
 - D* finish cleanup of PGEOM
 - D* *GEO programs to record BLC, TRC, IMSIZE in history file
 - N? HGEOM blows up on high (10^9) brightnesses
 - D* HGEOM missing adverbs in help file
 - D* HGEOM takes too many parms from 2nd header (see gripe 1884)
 - D* HGEOM fails has errors on floating input
 - D? HGEOM to handle conversions between celestial, galactic, ... coords
 - ?? speed up LGEOM
 - ?? LGEOM shifts zero point 0.5 pixels (2502)
 - .. Combine LGEOM, PGEOM, and HGEOM tasks into one?
 - .. task to “feather” re-projected images into giant mosaics
 - .. Design new “LGEOM”:
 - .. avoid virtual memory
 - .. utilize vector hardware (both PSAP and 120B)
 8. .. Combine single-dish and interferometer data
 9. .. Task to fill in blanked pixels: interpolate, extrapolate
 10. ?? “UNARY” operator task (Don, Eric)
 - ?? check IPPS “unary minus” menu
 11. .. APCLN-like task for non-symmetric beams: done to 1st-order
 12. N. VLBI improvements: (John, Bill)
 - N. VBLIN shouldn't be case-sensitive in station names
 - N. Interactive edit/plot on DR files
 - N. *uv* plots with error bars

13. .. Rebuild Measuring Engine as *AIPS* Task (Don)
 - .. integrated into *AIPS*
 - .. catalogs and measurements as tables files
 - .. solve plate constants against multiple catalogs
 - .. measurement process driven by tables of coordinates
 - ?? image capture with precise geometry: 1st part done
 - .. digital/analog image registration using two TVs

Medium priority (lots of work, less used programs)

1. .. GREYS:
 - .. use TV LUT as option
 - .. load with functype (?? — QMSPL offers this)
 - .. use white contour line over black grey pixel ??? very hard
2. D? QMSPL handle images too large for cheap grey-scale algorithm
3. ?? GETERR: (Eric)
 - ?? drop NGAUSS argument, inside NGAUSS → MGAUSS
 - ?? Fix SLFIT (also test on DEXP, TOL to GETERR)
 - ?? add baseline fitting to SLFIT — how to store answers?
 - ?? Fix new IMFIT
4. ?? Slices (Eric design)
 - ?? print out values (verb?)
 - ?? Display on TV like TKSLICE
 - ?? convert to tables format
 - .. plot multiple offset slices
 - .. Moment fit slices
 - .. Find along curved tracks
 - ?? SLICE:
 - ?? Option to limit interpolation order to 0, linear, ...
 - ?? make 2-d image from cube.
 - ?? fails on XGAUS (.CENTR) images ?
 - ?? SLFIT:
 - ?? clean up units, display
 - ?? fit a baseline
5. N. BLSUM
 - .. option to catalog results (???)
 - N. Improve help, output data (2463-4, 2485)
 - N. go to table method like XGAUS (below)
6. ?? XGAUS (Eric)
 - .. various restart options: use table, separate task to build output images, ...
 - ?? error ? on NGAUS = 4
 - ?? 2-d in, 1-d out fails ?
 - ?? bug in CENTR maps (NGAU=2)
 - ?? “no plot when fitting 1 profile”
 - N? test EDROP, BDROP for bad values (no pixels left)
 - ** Convex finds bugs in XBASL — see gripe 2038

7. ?? POPS
 - .. Continuation line (or something) for long ADVERB = *, *, *, ... statements.
 - ?? Bug leads to procedures being concatenated after an EDIT
8. .. GNPLT, GAPLT — (do after gain file format change):
 - N? Fails to handle time limits correctly (2201, 2203)
 - .. Capabilities of GAPLT
 - .. Alternate plot symbols
 - .. other axis types and scalings (esp. "scan number")
 - ?? clear READ status
 - ?? alternate plot method — see gripe 2055
 - N? GAPLT to be less sensitive about missing AN file
9. ?? IMMOD, UVMOD, CCMOD — Clean up: (Eric, ?)
 - ?? IMMOD: BMAJ, BMIN = radii in asec, not axes
 - ?? UVMOD: Divide by 0.0 in BESSEL for DISK option ??
 - N? CCMOD doesn't handle input table correctly (2206)
 - .. Rewrite CCMOD (see Benson's version); pixels may be better than asec (???)
10. D? PBCOR: (Eric, Ed)
 - D? rewrite to standards
 - D? allow non-VLA antennas
 - D? tell true cutoff (3%) in help file
 - D* correct error in FILDES in WaWa IO - see gripe 2037
 - D? GPOS negative fails
11. N? PRTAB: BCOUNT = ECOUNT fails (2522)
12. .. VBPLT:
 - .. check use of JULDAY
 - .. speed it up
 - .. average channels option
 - .. all baselines on one plot option with/without data
 - .. plot points with error bars
13. .. Rewrite RM:
 - .. easy inputs
 - .. standard or user-friendly units and code
14. .. Header: shift parameters to more user-oriented meaning
15. ?? Read/write FITS files from/to disk (port, user save) (Bill, Eric)
 - D. First pass: use AIPS disk I/O
 - N? Change to new sequential I/O methods: VMS, UNIX, ...
16. ?? Rewrite IMFIT, JMFIT to one task(?):
 - N? DOWID(2-n) ignored on Convex?
 - ?? JMFIT convergence criteria too lenient (see gripe 1763)
 - ?? to standards
 - ?? accept initial guesses for 0-level, slope
 - N? solution outside field (2425)
 - N? JMFIT bad errors, answers at low S/N
 - N? add PRTLEV, bigger field (2425)
17. n? Task to find, fit and classify sources.
 - ?? use methods, *et al.* from fitting tasks

18. .. Clean up Gustaaf's line tasks
 - .. to standards and to work as advertised
 - .. generalize
 - .. IRING: fix help (see gripe 1566)
 - ?? GAL: bugs (Don)
19. .. Clean up other line tasks: (MOMNT, SMOTH, ...)
 - .. generalize, to standards in coding
 - ?? SMOTH, MOMNT cannot handle blanked pixels ???
 - ?? MOMNT message re history gives wrong moment number
 - .. ????

MISCELLANEOUS

These items are easier to do and need doing. Some are simply in the nature of bug checking, others are responses to Gripes.

Verbs:

1. ?? How to pick up new adverbs easily despite LASTEXIT (Eric)
 - ?? User DEFAULT RUN file, if present, instead of loading LASTEXIT
 - ?? Autoload RUN NEWPARMS to make sure new adverbs present (??)
 - ?? Adverb to suppress saving LASTEXIT on EXIT, RESTART
 - ?? Drop RESTART
2. ?? RUN files:
 - ?? User/system RUN file index verb
 - ?? RUN file form for SAVE operation
3. ?? Verb to display HELP INDEX by keyword(s) match. (Eric)
4. N? Improved categories for general HELP files (Eric, Alan)
5. N* INPUTS (Eric)
 - N* Adverb to start with page *n*
 - N* Limit display to selected category of parameter (CALIB)
6. D? Verb to insert a pixel value in an image. (Eric)
7. ?? History file manipulation (Eric)
 - ?? Verb to insert a comment in the history file. (Eric)
 - ?? Verb to edit history file — delete by task, line numbers (Eric)
8. ?? Verb to “set TV cursor on RA,Dec” — *i.e.*, graphics box (Eric)
9. N? Verbs like CELGAL for ecliptic-celestial/galactic coordinates (Eric)
10. N? Verb to display convolution/deconvolution of beams (2501)
11. N? Verb to kill a batch job ??? (Eric)
12. ?? TKSET — clarify cursor positioning in the Help file (Don)

13. ?? EXTLIST: (Eric)
 - ?? display slice fit results
 - D* FACTOR, ICUT, PCUT in PCNTR have too limited a format
 - D* not be real patient waiting for a file
 - D* INVERS adverb
 - D* help file refers to CT files
 - N? display the file sizes
14. ?? ZAP to deal with bad headers, missing CB files ???
15. N? TIMDEST to detect and handle errors better
16. .. Verb to catalog extension files
 - .. (Add tests for primary type = desired extension type to TKSL verb, SL2PL, PRTAB, ...)
17. ?? Image units, fluxes (Eric)
 - ?? IMEAN, IMSTAT, etc. recognize JY/PIXEL units
 - ?? these routines convert to flux if NITER = 0, but clean beam okay?
18. ?? (VAX) REWIND available as quick return (???)
19. ?? Clarify *POPS* environment in GET help file — procs can be lost
20. ?? ALLDEST apply DOCONFIRM to SAVE/GET files
21. ?? TKSLICE
 - ?? display y axis even if undefined units
 - ?? y-axis label often fails actually
 - ** extend plot range a bit for clarity
22. .. TV labeling:
 - D. include user character string
 - .. clean beam
 - N* Stars
 - .. new LTYPES: source name, angular scale, freq
23. .. TV:
 - .. anti-wrap algorithm causes strange behavior at high zoom
 - .. new spiral hue/intensity LUT (see gripe 1218)
 - .. TVBOX-like to set up inputs to MX
 - .. TV version of TKSLICE
 - ** Change DOPOS to something else in TVMOVI
24. N? System access:
 - N? Verb to drop to DCL subprocess (2210)
 - N? Verb for quick logoff ?? (2210)
25. .. Convert FRMT to a Z routine.
26. .. Have Z routines report errors in blocks. (Eric?)
 - D? ZCREAT
 - ?? ZEXPND, etc.
27. .. Verbs:
 - .. FINDSPACE — find disk number with most space
 - .. FINDNAME — find image with some name parms.
28. .. Catalog: NEXT
 - .. return array of catalog numbers (???)
 - .. rename a set of maps to sequence the SEQ numbers (???)

Tasks

1. ?? batch problems (Eric)
 - ?? AIPSC : option to turn off checking (some procs get 0 divide?) or make response to errors optionally less drastic (Eric)
 - ** reduce delay times at start up; first loops in QMNGR (Eric)
 - ?? batch jobs not delete CA files, messages
 - D? BATER: QUEUE verb troubles (2239)
 - D? NOBAT: errors on Convex (with FTAB? 2237)
 - N. Verb to submit a single task as a batch job (2211)
2. ?? Source code import
 - .. Other submitted programs: ???
3. ?? Check buffer size for *uv* tasks: enough for line? (Bill)
 - ?? UVPLT (see gripe 1478)
4. ?? UVFLG — Change to accept APARM(9) = 400 as = 4.
 - ?? Clarify the confusing array of options (2437, ...)
 - N? be more communicative (2530)
 - N* Failing on Convex (*e.g.*, 2174) and VAX (2243)
5. N? BCALn: rewrite with revised design — nearly done
 - N? Bugs giving math errors (2212)
 - N? History file incomplete (2213)
 - N? Current tasks non-portable
6. ?? TVHXF, TVHLD problems
 - ?? Differ between Charlottesville and VLA ??
 - N? Fails on Convex (2527)
7. .. SUBIM
 - .. DOALL option
 - .. ZINC option, but over all dimensions 3–7 or just 3?
 - .. Option to sum/average over the XINC by YINC box
8. ?? Tape handling (Eric)
 - D? Does PRTP count label files as files — it should.
 - .. OR: change AVFILE (incl. in tasks) to skip label files without counting them.
9. .. Contouring, plotting
 - D? Better dashed contours for large images
 - ?? Better handling of narrow x axes (labels overlap)
 - .. PCNTR accept and convert I, Q, U images also
 - DN PCNTR allow 0 and wider range in ICUT/PCUT
 - N? to put their parameters in history file also?
 - N? option to put BLC/TRC on the plot
10. N. IMFLT fails? (2433)
11. N. Single dish to *ATPS*:
 - N. Pseudo-*uv* gridding to allow other geometries (SELSD)
12. .. UVEXP — error leading to apparent loss of sort order ?

13. .. VBFIT — may be replaced by CALIB (Bill)
 - .. print accounting of flagged/blown solutions (like ASCAL)
 - ?? Explain refers to non-existent table for APARM(3)
 - .. Option to print delay, rate, S/N, oversampling used.
 - ?? Inputs has default for solution interval in wrong place.
 - ?? Ignores BADDISK ??
 - .. Option not to write an output *uv* file
 - .. Keep DR files with input *uv* file, recognize by version #
 - .. Option to give list of reference antennas (see gripe 1813)
 - ?? Add info to help/COOKBOOK per grip 2077
14. .. UVCOP
 - .. DOALL option, different user option
 - .. option to start with smaller output file (disk-full problems)
15. N? CLIP: strange flux clipped on Convex (2219)
 - N* EXTIO errors reported (2534, ...)
16. .. UVAVG
 - ?? Delete AVER (???)
 - .. Bugs: apparently reporting times out of order
17. N. Rewrite XTRAN to use ST extension files (Eric?)
 - N? explain what NPOINTS is used for
18. .. SUMIM:
 - ?? Other ways to get input images besides DO loop on INSEQ
 - ?? Images taken as planes of one input cube: task or option
 - .. Bug? (reported 10³¹ peak from it)
 - D* Bug? fails to use BADDISK
19. .. One-dimensional data:
 - .. “Front-end” to read in single-dish data
 - .. Better handling methods (multi-source *uv* format?)
20. ?? Source-code export: (Eric, Kerry)
 - ?? FITS version of EXPTAP (called EXPFIT currently) — done?
 - ?? a reader program (requires text write routine!)
21. ?? VBCIT: error testing needed on DATAN2
22. ?? NTERP: error access violation line 225 or so

OTHER THINGS

These are other suggestions, some good and some bad, recorded here so they will not be lost. We might get to these some day.

1. ** Users' Group: meetings, software exchange, etc. (Don, Alan)
 - N* 1987 AIPS Workshop — October ?? (Alan)
 - N* “Exploder” for Users' Group E-mail (Don)
 - ?? Set up computer bulletin board
2. .. Improve the computation of the vertical scaling of PROFL plots.

3. .. False color usage in areas of:
 - .. polarization
 - .. spectral index
 - .. *uv*
 - .. spectral-line: sum(I), velocity, width
4. .. Fancier contouring:
 - .. bold, labeled contours
 - .. ingoing ticks for minima
 - .. follow contour
5. ?? PRTPPL (Eric)
 - ?? speed — new bit routine, quick grey-scale
 - ?? line width control (for low-resolution devices)
 - ?? better grey scale options and algorithm (like QMSPL)
6. N. CONVL: (Bill)
 - .. Compare CONVL and SMOTH
 - N. add progress messages, decimation of output (2483)
 - N. input file marked write (2485, 2507)
 - N? wrong extrema in header (2487)
7. .. Task to do direct Fourier transform mapping
8. .. Task to remove current clean comps from image and put back with another size.
9. .. FINISH should be ok at end of any line in proc
10. .. PROC(*array*) should work when called as PROC(*scalar*)
11. .. IMHEADER(*n*) ; QHEADER(*n*) (???)
12. .. Investigate troubles with blank tapes on DOEOT.
 - ** Add to help files: DOEOT, FITTP, etc.
 - ** Get VLA blank-tape fixup method for all VAXes
13. .. An *AIPS* Tee-Shirt!?
14. .. Biannual *AIPS* Workshops!?