Recent developments in MIRIAD

!!! DRAFT !!!

(16-oct-2009 15:00)

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and a slew of others:

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History

(see also $MIR/VERSION)

- 1988: 1.0 Sault version
- 199x: 2.0 blabla UIUC
- 2000: 3.0 conversion to CVS
- 2009: 4.1 bla bla
- 2010: 4.2

Documentation

- Website: http://carma.astro.umd.edu/miriad
- Wiki: http://carma.astro.umd.edu/wiki
- PDF: User/Programmer Manual, Cookbook
- Unix command: “**mirhelp**”

New Programs

- CARMA
  - New UV variables, clarified others (time!)
- SZA
  - New UV variables needed for integration
- PACS (CARMA/SZA 2008/9 campaign in B and A array)
  - **gpbuddy**
  - **drPacs** pipeline

Developments

- GPU programming (UCB)
- Drpacs pipeline and PACS support (UMD/CIT)
- Autotools based install (UCB/UMD)
- Scripting support (python, ruby)
- ATNF version
  - Using RCS, we keep an RCS2CVS in '**miriadau**'
  - auto-untabbing&col80 complicated diff same code

Future

- Use GPUs:
  - Speed up deconvolution
  - Realtime pipeline processing (ATA?)
  - GPU's still have several implementations
    - CUDA (nvidia specific – nice fftw/linpack implementations)
    - Brooks (?) (ATI)
    - OpenCL (more generic, but painful to implement)

Installation & Development

- Old style build:
  - Shell scripts
  - Mirboss; mir.subs [xxx] ; mir.prog [xxx]
- New style build:
  - Automake/autoconf
  - Mostly working, but:
    - No support for WIP, RAD modules (libmir broken up)
    -

Ruby

Python

- Long and winded history, many implementations
- PyWip
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MEMO's

- Velocity Fields (Teuben & La Vigne)
- Miriad Benchmark
  - V1 (old BIMA benchmark: mir.bench)
  - V3
  - New CARMA (calibration) verification script?
- drPacs pipeline (Teuben)
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Regression Testing

- mir.test (very basic test if package compiled)
- mir.testx (very basic X windows based)
- mir.bench (confirm performance)
- mir.carma (confirm CARMA calibration)

External Packages

- The miriad library is used by others, and this needs to be closely monitored:
  - CASA (currently outdated, pre 2GB patch)
  - Various python modules
  - WIP (handcoded a few I/O routines, which is prone to bugs; WIP should use MIRIAD library instead)
    - Do we still need WIP ? There is also pywip.
    - Matplotlib with aplpy is also an option?
  - KARMA visualization

Visualization

- Ds9: shell script '**mirds9**'
- Fv
- Python: matplotlib, aplpy
- Karma: kpvslice, kview (and lots others)

Tables

- There is now a tableio.c package, but not widely used

Scripting

- Shell (csh, bash) – mostly csh used
  - Command line parsing?
  -
- Tkrun, now also in python
- Pyramid and others
- pywip
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.**drPacs**. : a generic Unix pipeline

- Use a set of Unix commands in a pipeline
- 'pipe' and 'pipepar' are the user commands
- Uses 'make' under the hood for dependancies
- Can optionally save and restore (pipe) pars
- Need only minor modification to scripts (see examples in memo)

Code Improvements

- File size
  - 2GB limit; solved long time ago
- Memory allocation
  - 64bit issues
  - MAXDAT
- Fortran-90 ?

BUGZILLA

- This is the right way to report bugs, it keeps a good history. Email to Mel or Peter is prone to side effects
- Some recent bugzillas:
  - 73x: **Q**: is **time** interval centered? **A**: **YES**

Other observatory tools:

- Xplore (Ted Yu)
  - 1cm fluxes need to be automated

CASA

- Current status:
  - Bimafiller now called Carmafiller

Desired Features

- **tvflag** in non-8 bit
  - Uvimage trick expanded?
- Autoflagging tool? (cf. ATA development)
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User Contributed Scripts

- There's lots of scripts written that other users might not see: reinventing the wheel.
- moment.csh (Tony Wong)- BIMASONG
- Jin's scripts – SD addition tricks
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Cookbook

- Is it really useful?
- Wiki?
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Miriad Binaries

- Auto-updatable Mac and Linux binaries
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fluxcal

- User community
- Dave Thompson – GSFC – Fermi observatory
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ATA

- Any ATA specific developments?

SMA

- **smalod** will load SMA data, but recently the increased bandwidth (plans?) will need a new version of this program
- CASA ?

ATNF

- ATNF is a different version, with largely the same code base
- Recently ATNF switches to RCS, so we keep an RCS2CVS module 'miriadau' to simplify sync
- ATNF is also slowly detabbing and col80 their code (even comments), complicating our attempts to sync code where possible

Experiment-1:
playing with gains in combining CARMA/BIMA/SD datasets