FABRIC Progress

- Mark, Huib etc.

T. Charles Yun
Project Manager
EXPReS/JIVE

Overview and updates

- Slides from:
  - JIVE
  - PSNC
  - Metsähovi
  - JBO see JBO report

- Questions to the ones that know the answers please!

JIVE: Personnel Changes

- Huseyin Özdemir, left on March 31st.
- Nico Kruithof (SCARIe) left on June 30th.

- Des Small took over some of Huseyin's work.
- Michael Sipior started working on prting SFXC to GPUs
- Aard Keimpema took over from Nico on September 1st (SCARIe)

Unfortunately this means more delays.

Progress on Software correlator:

- Conversion to MeasurementSet implemented
- Conversion to FITS possible
- Data can be loaded into AIPS
- Digital sampler correction (Van Vleck) implemented
- Mark5B and VLBA data formats implemented

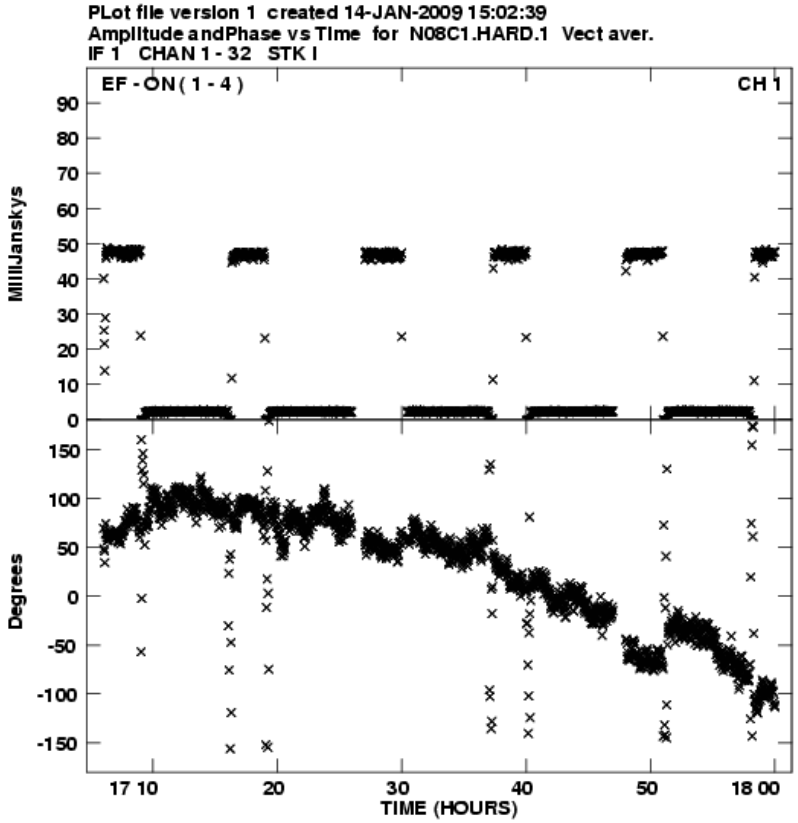
Optimizations:

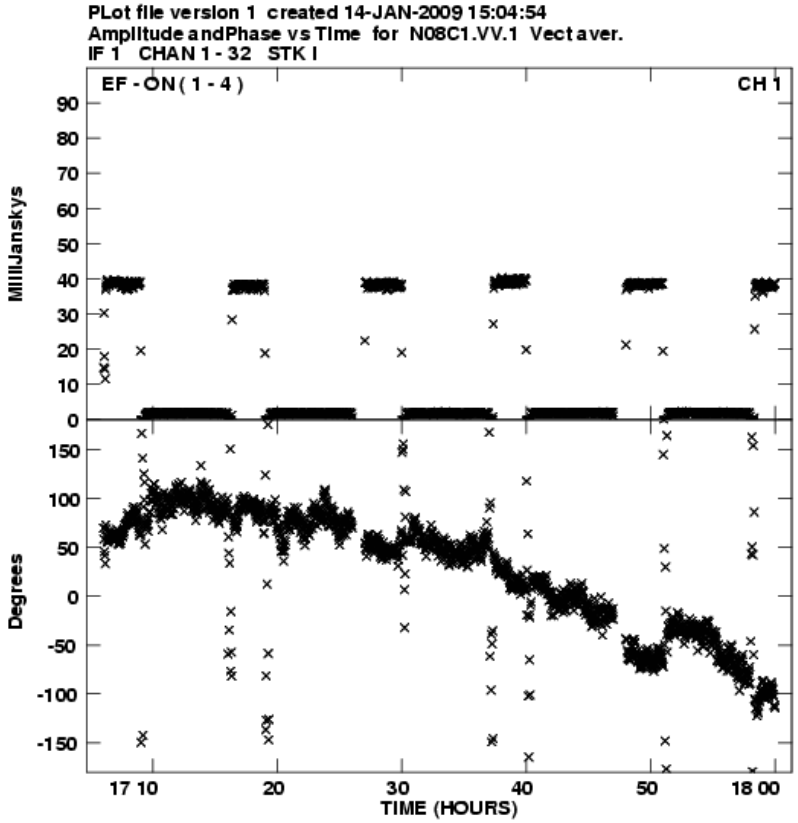
- Optional reverse order of fractional bit shift and fringe rotation: 25% faster
- Different FFT implementations: somewhat faster for high spectral resolution

Validation

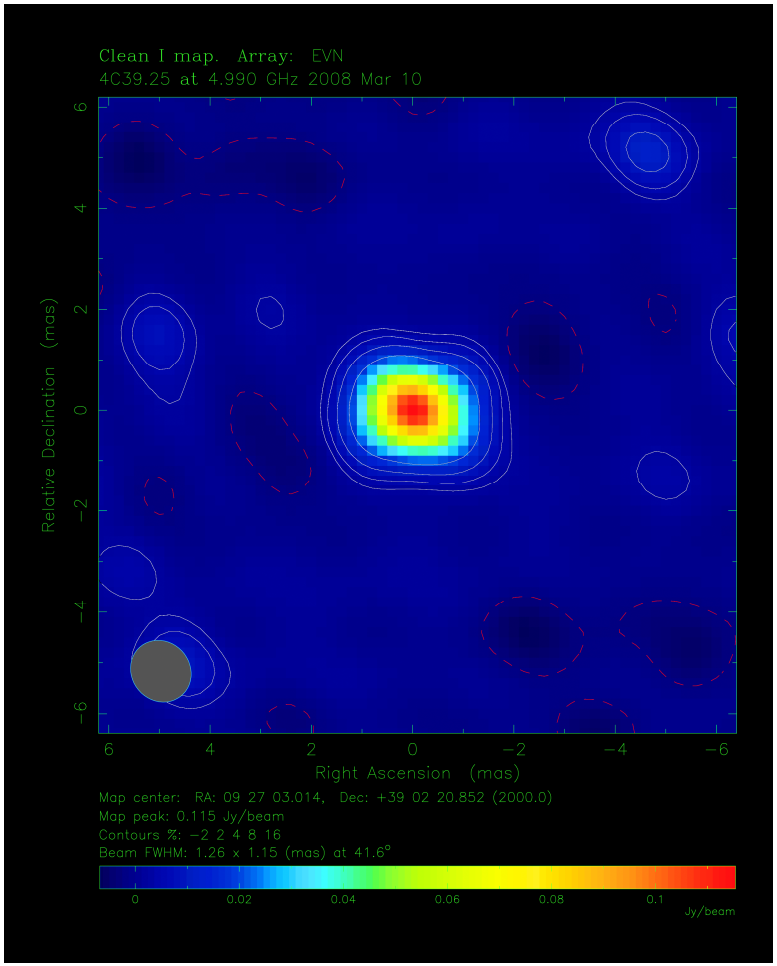
Comparison with Mark4 correlator:

- Phases match within 1 degree
- Amplitudes are 15% lower





First Images



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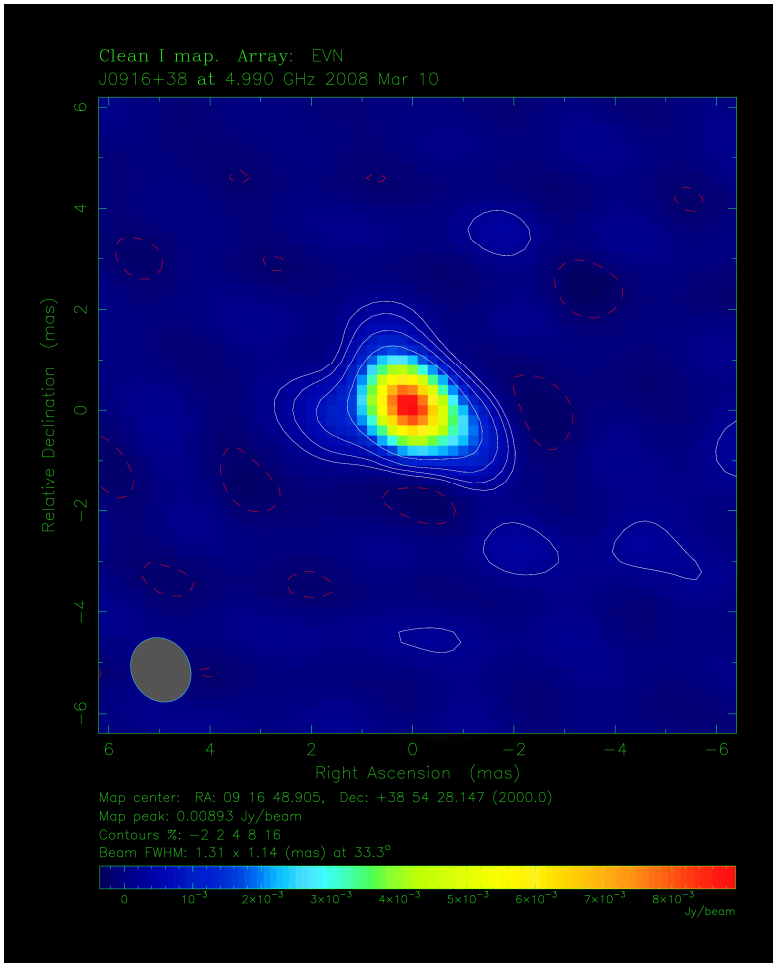

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Webservices

Integration with “the Grid” through webservices:

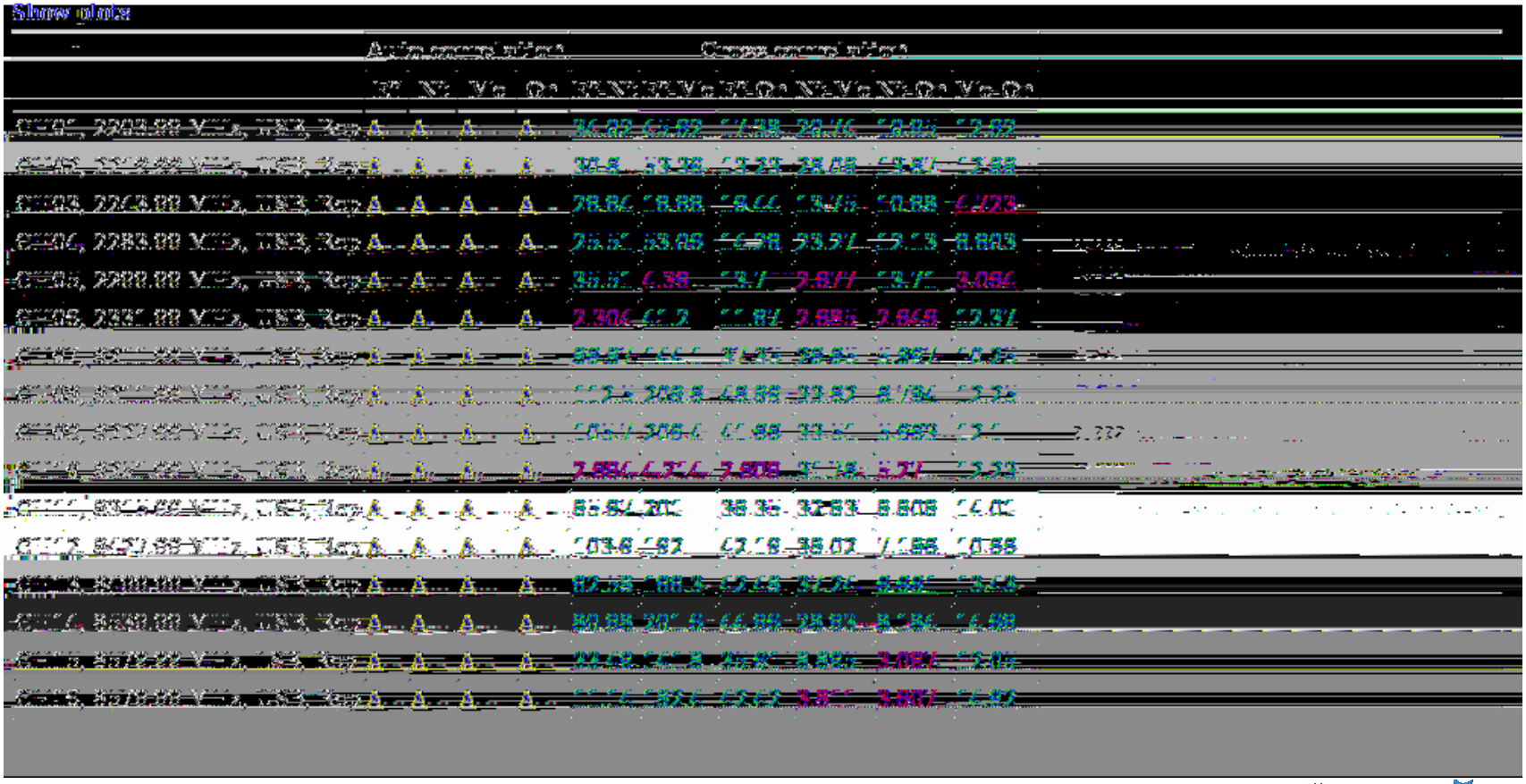
- vex2ccf finished, tested with workflow manager
- translation node (to distribute data on the Grid) finished; awaiting further tests

Currently development is on halt; needs VLBI grid broker

JIVE

FTP Fringe Tests

- Fully operational now
- Produced first Yebes fringes!



Post Processing

- JIVE uses j2ms2 to convert hardware correlator output into MeasurementSet.
- j2ms2 has been adapted to accept the SFXC output format.

Benefits:

- Standard analysis tools can be used.
- Translation into FITS through standard pipeline (skipping some steps).

Result:

- Data can now be read into AIPS and matches data produced by hardware correlator.

Remaining Work

- Further optimization of correlator core
- Test integration with Grid broker
- Implement & test real-time correlation

PNSC: Recent Activities (1 of 2)

- VLBI Broker
  - Implementation the VLBI Broker (first version)
    - Communication with Workflow Management Module
    - Communication with Translation Nodes
  - Design of a distributed version of the VLBI Broker
  - Design and implementation of a communication interface with Network Module
- Correlator Job Submission Module
  - Design and implementation of a communication interface with VLBI Broker
  - Design of a module core
- Network module
  - Design of a module core
  - Design and implementation of a communication interface with VLBI Broker

Recent Activities (2 of 2)

- Workflow management
- Implementation of a Workflow Management Module with the following functionality:
  - Possibility to load a vex file
  - Possibility to convert a vex file to CCF file
  - CCF editor
  - Possibility to create an observation workflow
  - Possibility to submit a workflow for execution

- Personnel changes have also caused minor changes to schedule, but with the planned extension, but should be managable with the extension period

METSAHOVI: Recent Developments

- Development of 4G-EXPReS Data Acquisition System
  - Targeted for new dBBC or DBE2 use with 10GE
  - 10 Gbps Ethernet tests
  - Disk controller and SATA port multiplier tests
  - High speed streaming with Tsunami protocol
  - Design of a new-style disk pack and tray
  - Result: 4 Gbps speed, 60 TB capacity
- Hardware Based UDP/IP (Tsunami, VDIF) Streaming
  - Together with Jodrell Bank and Onsala
  - Targeted for Onsala -- JB eMerlin link
  - Successful 8 Gbps demonstration from Metsähovi to Onsala in June 2008
  - Also suitable for dBBC or DBE2

4G-EXPReS disk recorder

- Targeted to record from upcoming 10 Gbps Ethernet digital backend output such as the dBBC, DBE2 and others.
  - 4 Gbps, 1.5 TB disks, 17 hours
  - 4 Gbps, 2.0 TB disks, 20 hours
- Hardware: The Serial ATA port multiplier
  - Based on SATA port multiplier (PM) technology, part of the Serial ATA standard (used in place of SAS)
  - Commercially available, low cost and supported by many modern SATA controllers.
  - Hosted on a high-end, gaming computer

Diskpack details

- Diskpacks
  - developed external, low-cost diskpack variants carry 20 or 10 SATA disks
  - Connected to mainboard via single InfiniBand/miniSAS multilane cable
  - 12 Gbit/s max throughput
  - The recording system can emulate Mark5C commands and can store network data in Mark5C, VDIF and other formats.
- Performance
  - Over 24 hour recordings are possible with two diskpacks
  - Current write rates are in excess of 4 Gbps, reaching 6 Gbps. Expecting 8 Gbit/s with newer motherboards.
  - The diskpack is easy to carry and easy to ship
  - It presents a portable, shippable solution for high-speed recording and storage for those who do not desire to set up a traditional distributed network file system.

JBO Progress

- See update report
- Summary
  - Protocols final report in revision stage (later than we said)
  - 4.1 Gbps Onsala-Jodrell Link now working!
  - E-MERLIN Correlator racks powered up
  - Station board being tested locally
  - Coding. implemention and testing for iBOB almost complete
  - Good progress on ‘VSI Chip’ coding on Station board
  - Waiting for 1st baseline board and a further station board real soon now!

Questions/Answers

- Contact information

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- Additional Information

http://expres-eu.org/ [note: only one “s”]
http://www.jive.nl/

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