

# *Status of OPAL data*

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# About OPAL

- OPAL: The Omni Purpose Apparatus at LEP
- See [OPAL Page for Particle Physicists](#)
- Data taking from 1989 - 2000

# Data Types

- Raw Data
  - RAWD
- Data Summary Tapes
  - DDST, DST, CSDST
- File sizes: < 200 MB
  - With very few exceptions
- (N-tuples)
  - No central management

# Raw Data

- Packed hit-level information
- In ZEBRA format
- Stored on tape
  - Maintained (copy to new media) by CERN/IT
- One copy on magneto-optical disks
  - Medium very good for archiving
  - Drives and cataloging an issue

# Data Summary Tapes

- Reconstructed tracks, clusters, event shape,...
  - Compressed
- Results of event selections
- In ZEBRA format
  - Event header for analysis pre-selection
  - No streaming, but direct access lists
- Subtypes
  - DDST: Hit info kept for all event types
  - CSDST: Hit info kept for some event types
    - This is what users read for the analysis
- On tape (castor)
  - Intermixed with other users data

# OPAL Software

- F77 based
- Source in patchy
  - On purpose
- Heavily relying on CERNLIB
  - ZEBRA
  - Patchy
  - HBOOK/PAW
- Stored in afs
  - Copy in pubarch

# Monte Carlo

- Several Generators used
  - Output 4-vectors stored (in weird format) on tape
- GEANT3 for detector simulation
- Production system
  - Input 4-vectors, output reconstr. DDST
    - Frequently used samples: another step makes CSDST
  - Made heavy use of fatmen
  - Not working anymore

# Data Preservation Objectives

- Allow to continue analysis activities
- Combined analyses with other experiments
- Check new results or models
  - Does require ability to produce MC
- Open Access not foreseen
  - Knowledge of strengths and weaknesses required
  - All future analysis accompanied by LTEB member



# Data Preservation

- Data: count on CERN/IT for tape migration
  - Preserve 4-vectors, RAWD, DDST, CSDST
  - Should have a second copy elsewhere
  - Catalog: shall we rely on castor only?
    - No central effort to preserve Ntuples
- Software: try to keep alive
  - Migrate to new OS versions
  - Migrate to changing environments (castor2)
  - But rely on CERNLIB
    - And availability of 32 bit compilers

# Data Preservation, ctd.

- Documentation
  - OPAL primer
  - Technical Notes
  - Wiki for documenting changes
    - Just started
- Expertise
  - Long Term Editorial Board (LTEB)
    - Experts from sub-detectors, computing, analysis WGs

# Issues

- Data losses
  - Tapes do wear out
    - Effects all types of data
- Technology changes
  - Compilers
  - Cernlib
  - Tape access
  - Catalog

# Issues, ctd.

- Loss of software
  - Most analysis jobs stored in private directory
  - Problem with commercial software
    - No more visualisation
  - No CERNLIB build for SL5 foreseen
- Loss of documentation
  - Private notes not collected centrally
- Loss of expertise
  - People retire, go to industry
  - People forget
    - Accounts get deleted
  - Not every detail is documented
    - Why write down the obvious...

# Issues, ctd

- Resources
  - No more budgets
  - No more staff

# Conclusion

- Started (too?) late
- Efforts to improve documentation
- (So far) manage to keep data alive
- Worries
  - Future of CERNLIB
  - Tapes wearing out
  - Fading memories