

# The Preservation of the JADE Data (and Software)

Jan Olsson, DESY

A Long and Tedious Story,  
but with a Moral:

“Es gibt nicht Gutes,  
ausser man tut es”

(E. Kästner)

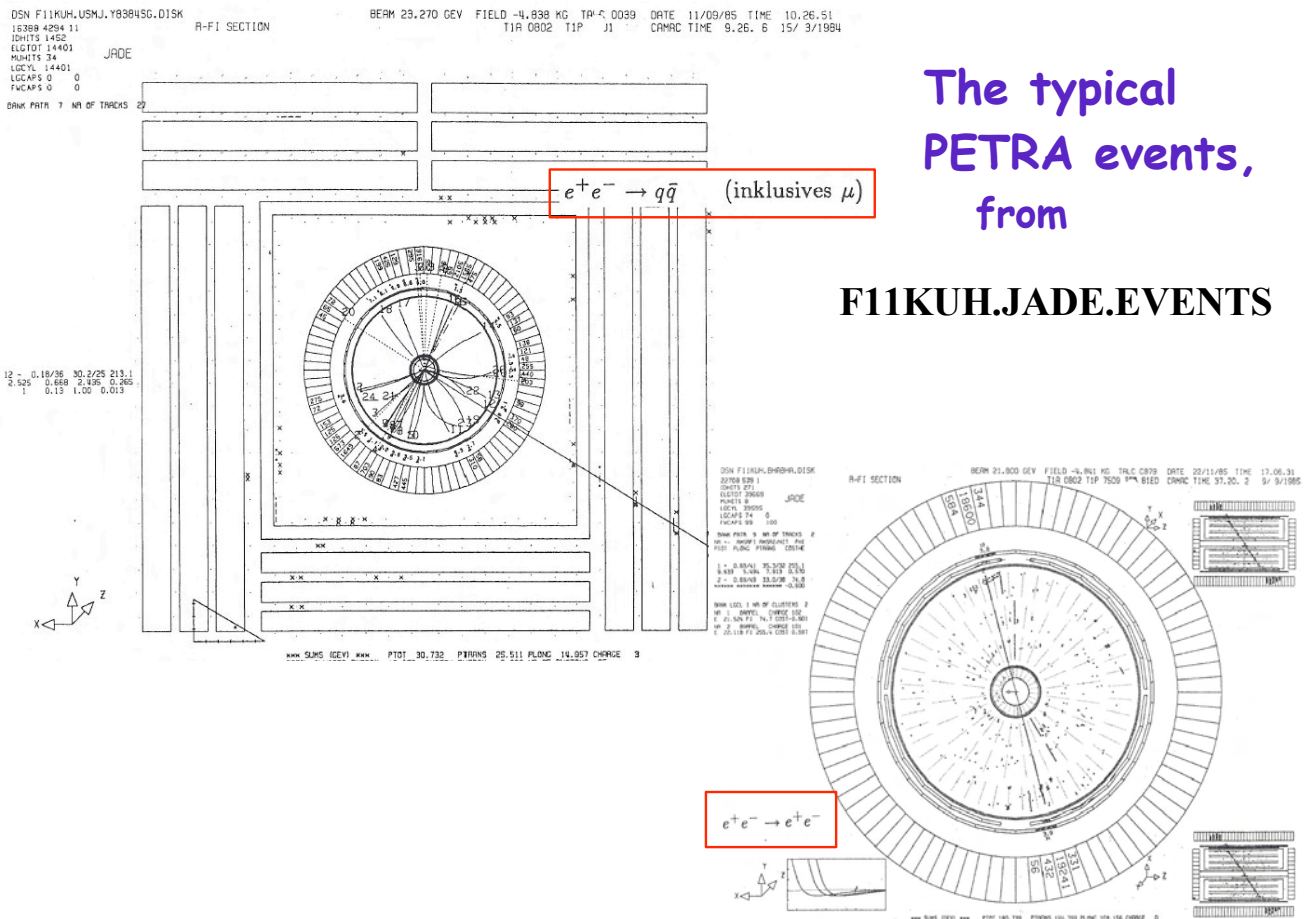
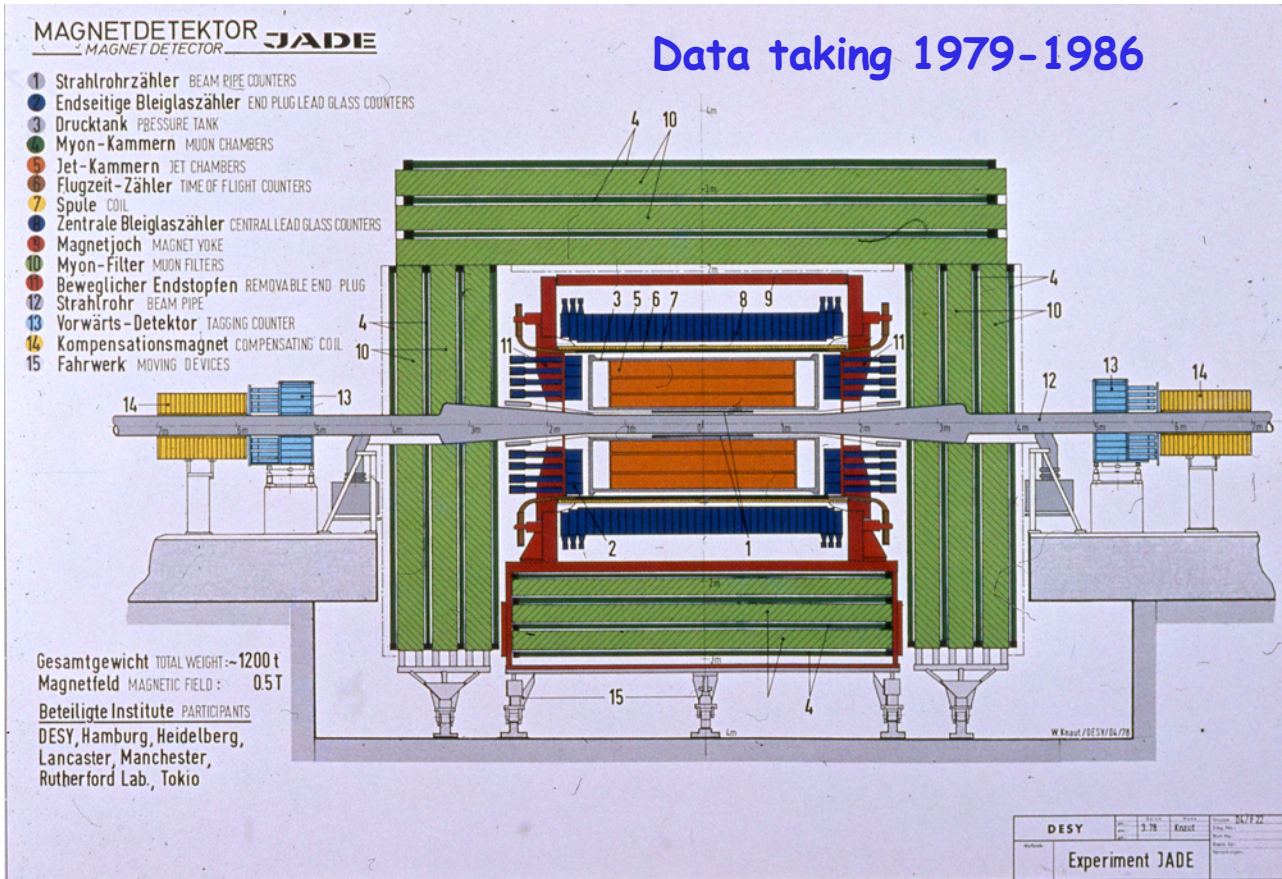


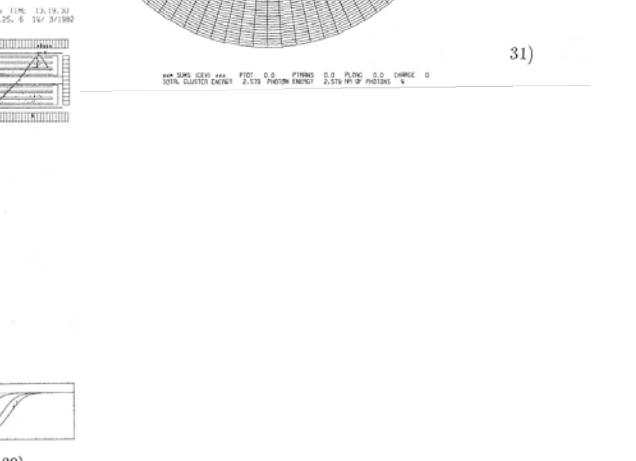
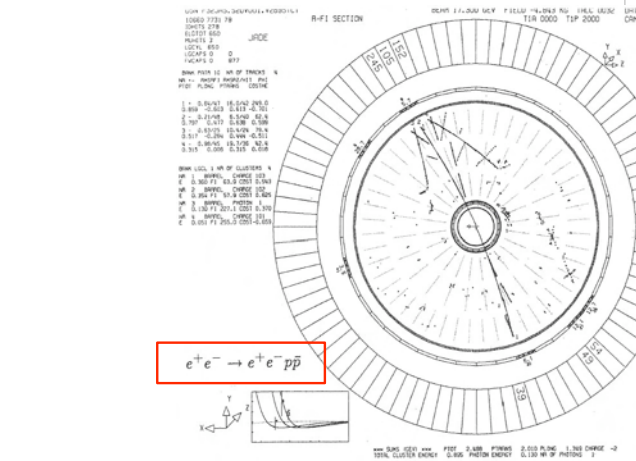
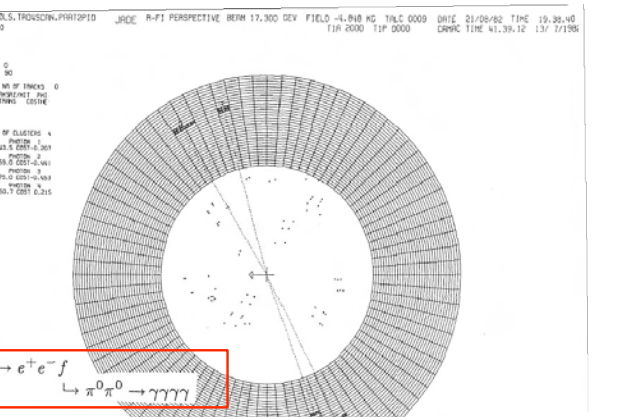
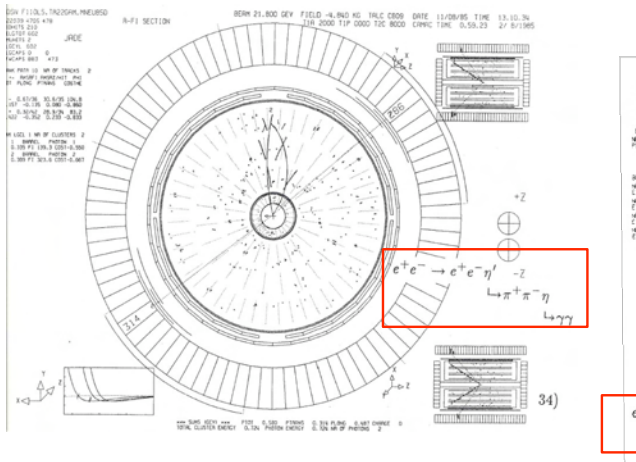
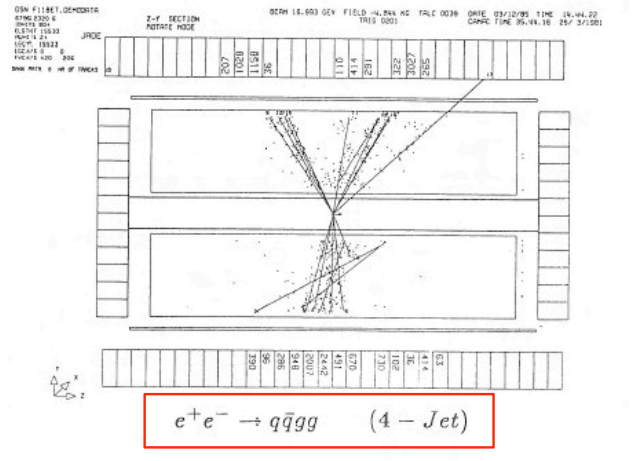
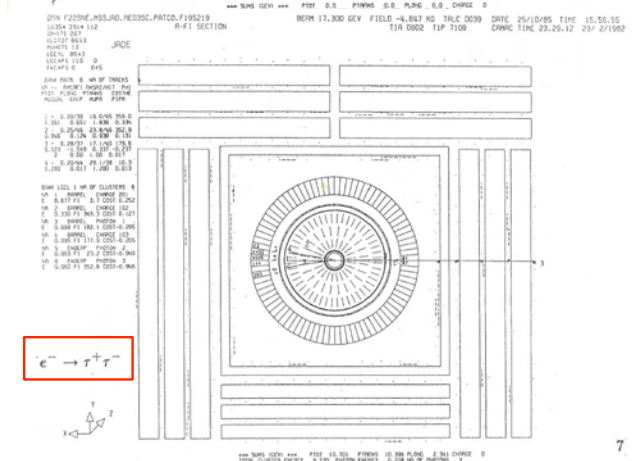
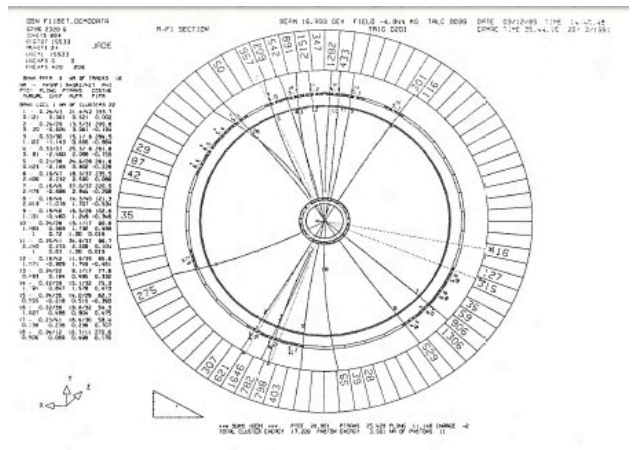
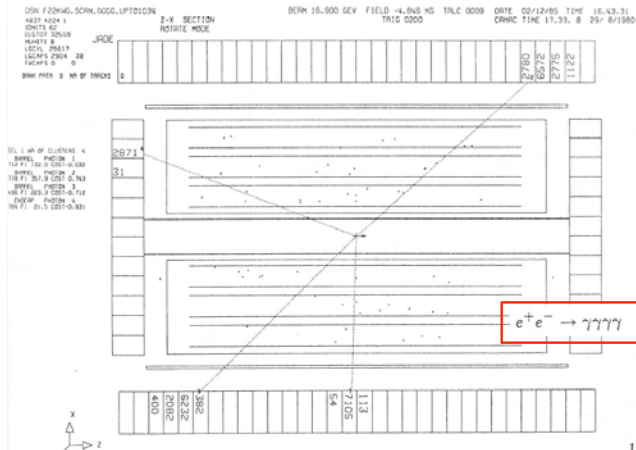
JADE Revival meeting, 22.08.2009

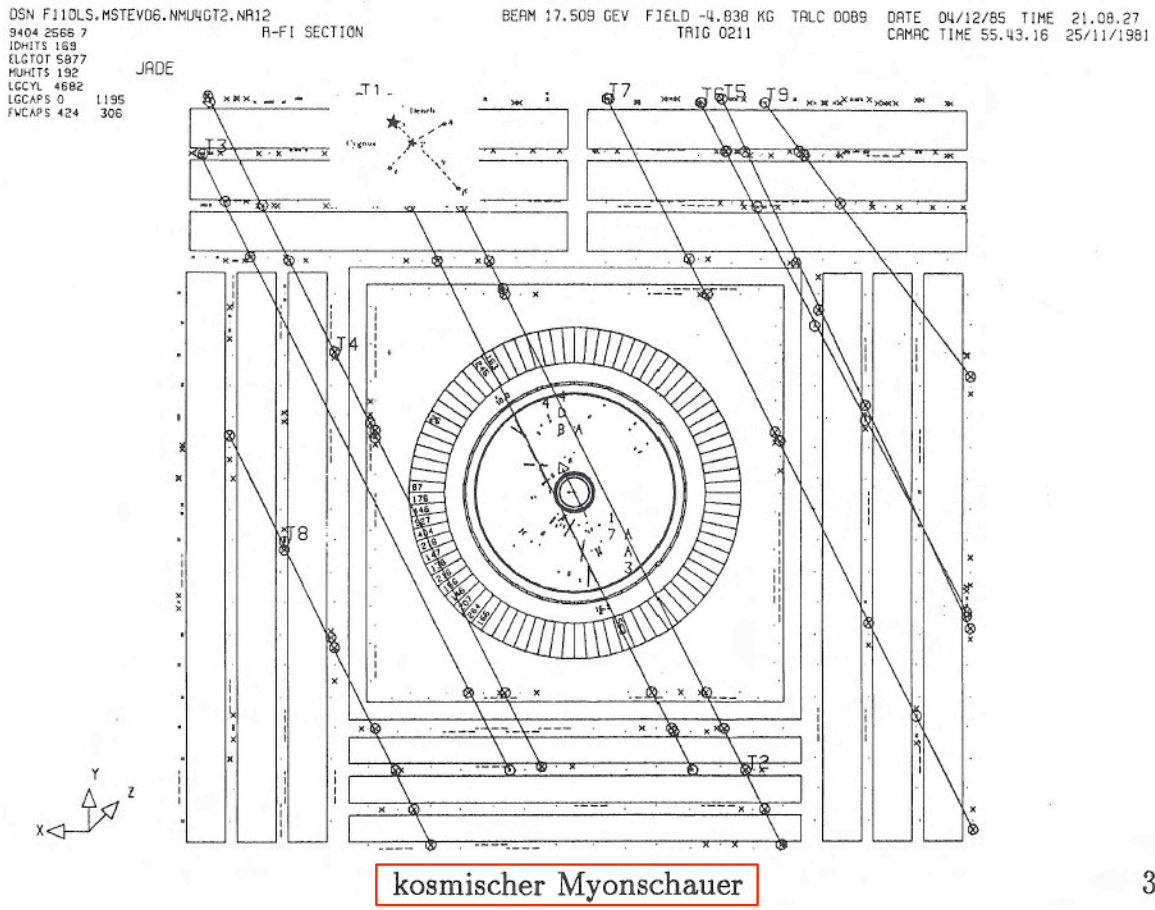
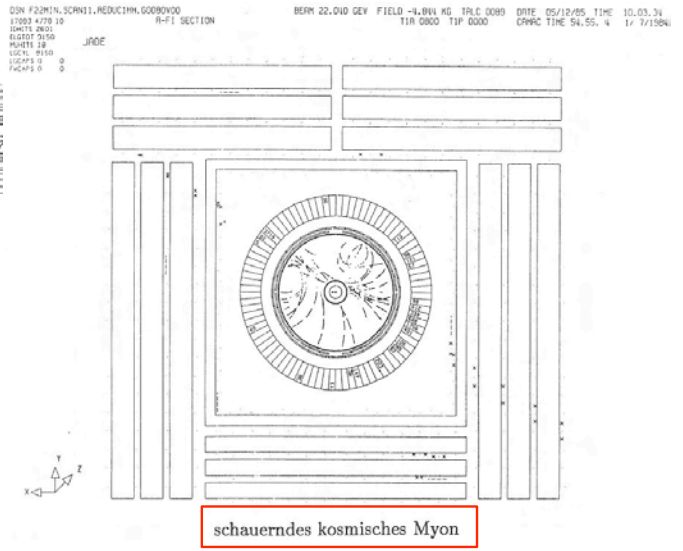
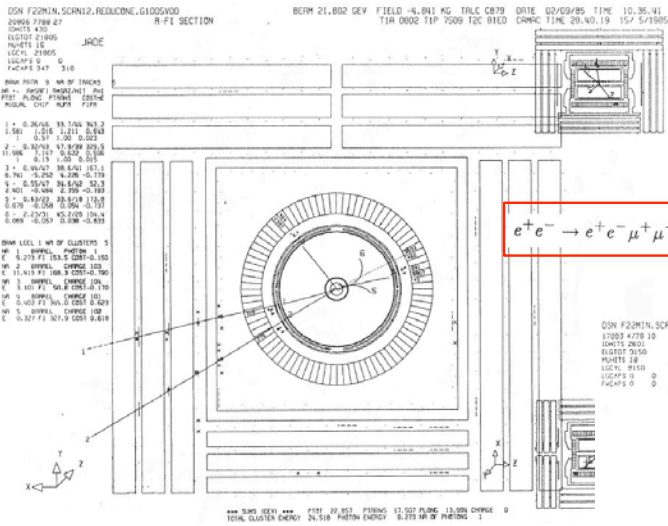
DESY, Hamburg

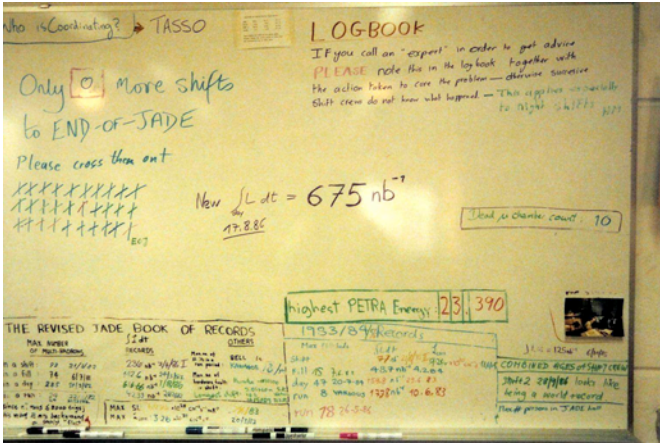


The PETRA North Hall, back in 1978









**End of Data Taking,  
3. Nov. 1986, 05:45**

**Last Run-number: 30397**

**Note:**

**16-bit for the Run-number  
==> Max allowed: 32767**

**We could have continued with data-taking still a while!**



**3.11.  
1986**

**End of  
8 years  
of  
Data  
Taking !**



## The JADE Data, at the end of Data Taking Nov. 1986:

### REFORM Data:

F11LHO.JDATA<sub>xx</sub>.REFORM.G0<sub>yyy</sub>V00 (xx = 01 – 17 yyy = 001 – 255)

**c:a 4200 Files ==> c:a 600 GB**

### REDUC1 Data:

JADEPR.DATA<sub>xx</sub>.REDUCONE.G0<sub>yyy</sub>V00 (xx = 01 – 06, yyy = 001-255)

**c:a 1500 Files ==> c:a 250 GB**

### REDUC2 Data:

F11OLS.REDUCTWO.G0<sub>yyy</sub>V00 (yyy = 001 – 582)

**c:a 570 Files ==> c:a 85 GB**

### NEUSUM Data (2-photon physics selection from REFORM data):

F11OLS.NEUSUM.RAWD<sub>xxx</sub> (xxx = 001 – 349)

**c:a 350 Files ==> c:a 55 GB**

### RED2NEU Data (Reconstructed NEUSUM Data):

F11OLS.RED2NEU.TAPE82E – TAPE86GY

**c:a 170 Files ==> c:a 26 GB**

**> 1 TB of Data !**

1 TB is not much with today's standards,

but in the 1980's it was a lot !

A round tape could store 160 MB, and each of the

PETRA experiments had thousands of such tapes.

Add to this Monte Carlo Data, and private analysis selections...

**==> Space was a Problem in the DESY CC !**

### Reminder: Hell's Data Destruction System

- Data created and written onto "Machine Room Tapes"
- If M-tape not used for a while, move to "Archive Tape"
- if A-tape not used for a while,
  - issue **First Warning** to the Owner
- if no reaction, issue **Second Warning** to the Owner
- if still no reaction, **DELETE THE DATA !**
- This system worked on all kind of Data, also on Libraries !  
(unless you had them declared as "Holy", with believable cause)

And the years go by... JADE analyses end, 1990-91...

## Winter 1991-92:

HERA will start soon

- H1, ZEUS and HERMES will start massive Data Taking !
- New Tape Robots (for Cartridges IBM 3480)  
to be installed at the Computer Centre
- Space for these Robots is needed! --> Archive Rooms !

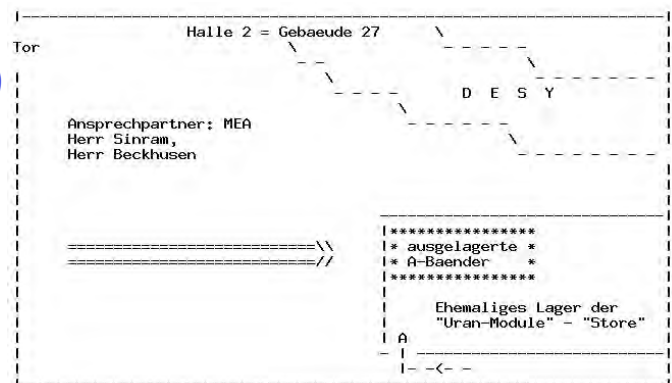
DESY Computer Centre: Request to the PETRA Experiments

- Reduce your Stores of A-tapes !
- If you don't want to discard the Data,  
we will arrange Storage in Boxes,  
elsewhere on the DESY Area (Halle 2)
- These (big) Boxes can only be moved with Fork-lifts, thus,  
using the Data again only possible in exceptional cases !

## Spring 1992:

JADE REFORM, REDUCONE and NEUSUM Data  
located in 23 big Aluminum Boxes, in Halle 2

(and no longer catalogued in  
the DESY Computer Centre)



And the years go by...

## Spring 1995:

The space in Halle 2 is needed !

Letter from Otto Hell:

An Frau U. Djuanda und die  
Herren M. Behrens, E. Deffur, M. Kasemann, C. Kluth, R. Lekebusch,  
D. Notz, J.-E. Olsson, J.H. Peters, O. Podobrin, H. Schroeder

Sehr geehrte Damen und Herrn, liebe Kollegen,  
in Halle 2 (Gebäude 27) lagern einige Kisten mit A-Baendern.  
Herr Sinram, der diese Halle verwaltet, hat angefragt, ob diese Kisten  
weg koennen, denn er benoetigt den Platz.  
Daher die Frage an Sie: Koennen die A-Baender fortgeworfen werden ?

Zur Erinnerung: Die Baender wurden damals nach Ihren Wuenschen ausge-  
sucht, von nicht auszulagernden Dateien befreit, ausgelagert und die  
darauf befindlichen Dateien aus dem allgemeinen Katalog geloescht. Ich  
stellte Ihnen darueber eine Dokumentation zu, in den Bibliotheken

'R01BEH.AUSL.KISTEN'  
'F13DEF.AUSL.KISTEN'  
'F01KAS.AUSL.KISTEN'  
'MPYKLU.AUSL.KISTEN'  
'F31KAR.AUSL.KISTEN'  
'F1BNOT.AUSL.KISTEN'  
'F11JOL.AUSL.KISTEN'  
'F14POD.AUSL.KISTEN'  
'F15SCH.AUSL.KISTEN'

## Letter from Otto Hell to the collaborations

30.03.1995

Einige dieser Bibliotheken existieren nicht mehr, was ich fuer eine  
Vorentscheidung zu meiner Frage halte. Zur Not finde ich die Information  
aber auch noch bei mir irgendwo.  
Bitte teilen Sie mir moeglichst bald mit, ob die Baender weg duerfen.  
Falls sie noch erhalten werden sollen, geben Sie bitte einen Zielort  
fuer die Kisten an.  
Mitte April werden wir dann die Kisten aus Halle 2 entfernen lassen.

Mit freundlichem Gruss / Greetings / Bien a vous Otto Hell

Dear JADE colleagues,

Some years ago, JADE data on A-tapes were moved into containers and  
stored away in Hall 2 (building 27) on the DESY area. All together  
there are 23 such containers with JADE data, each containing about 260  
A-tapes. This action was needed at that time, to free space in the tape  
archive rooms for the new IBM cartridge racks.

Not surprisingly, the space in Hall 2 is now needed for other purposes,  
and the JADE experiment, together with some 8 other tape owners, is  
requested to decide what to do with the tapes: Either throw them away  
or indicate some other place where we could store these data. The most  
extreme case would be to start an action to copy the data from the  
ancient tapes to modern storage volumes; this would reduce a big volume  
(a big room) to a small box of high density cartridges, which could be  
stored under a desk... Such a copy action would require intensive man-  
power for a couple of days and is NOT recommended by the computer center  
for obvious reasons.

It should be said that the programs to read and analyze the JADE data  
are all intact and running, i.e. the data could really be used still.

We should take a decision soon, since by middle of April, the cleaning  
of hall 2 will be started. If we dont react, the data is going to be  
destroyed. Please give me your answer soon, that I can communicate with  
Mr Hell.

With friendly Greetings, Jan Olsson

Copy\_to: R. Felst f2  
W. Bartel f  
Beate Naros  
G. Heinzell  
Jan E. Olss  
H. Krehbiel  
Peter Steff  
E. Elsen e1  
Dieter Haik  
C. Kleinwor  
U. Schneekl  
G. Weber f2  
A. Wagner f

In addition to the previous mail about the JADE tapes in hall 2, here is  
more information. The 23 containers are filled as follows:

REFORM raw data	containers 1-15
REDUC1 reconstr.data	containers 16-21
Low energy data from "neutral triggers", special selection for gamma-gamma physics	containers 22-23

My own suggestion would be to keep containers 16-23, letting the raw  
data be thrown away. This would be acceptable to Mr. Hell.

07.04.1995

## Letter to several members of JADE



Lieber Jan ,  
Deinen Vorschlag finde ich prima. Ich kann aber auch damit  
leben, wenn alle Tapes recycled werden.  
Gruss

Dear Jan

everything has its lifetime. With the JADE experiment having ended nearly  
10 years ago and nobody doing physics with those data for the last x years  
I have the feeling that one could throw the data away. I am aware of the  
small probability that someone might have an unexpected idea and wants to  
look at the data again, but how big is this probability...

If you really want to keep anything, container 16-end is obviously best.  
But we are close to the magic ten years and two e+e- storage rings  
with higher energy have been operating since PETRA.  
Probably one could destroy the remaining data in another 5 years ore so!

Lieber Jan,

ich finde auch, wir sollten die REDUC1 behalten, aber kopieren. Nach 10  
Jahren wird sowieso nur ein Teil der Tapes zu lesen sein. Wenn man da  
nichts macht, kann man sie gleich wegwerfen.

Hallo Jan,  
ich glaube nicht, dass ich die JADE Daten nochmal analysieren werde.

Hi Jan,  
I agree with your proposal.

Nach einer Umfrage in der ehemaligen Kollaboration zeichnet sich die  
folgende vorlaeufige Wuensche ab:

Die Container 1-13 koenner sofort weggeworfen werden. Die ent-  
halten RawDaten.  
Ueber den Schicksal des Restes besteht noch keine Einigung. Herr  
Felst (Spokesman von JADE) ist noch bis nach Ostern im Urlaub.

Wir werden uns daher nochmal melden. Sie hatten mir ja im Telefon vor-  
her gesagt, wenn die Haelfte der Jadedaten weg koennen, ist dies schon  
von grosser Hilfe...

With friendly Greetings, Jan Olsson

07.04.1995

Letters  
to and  
from  
O.Hell

Lieber Herr Olsson,  
wir haben immer noch keine Entscheidung ueber den geplanten Verbleib  
einiger A-Baender von JADE:

Juergen Eichbaum mitgeteilt zum Wegwerfen:	JADE	13 Kisten
Noch nicht entschieden ist ueber:	JADE	10 Kisten

Hat sich da schon etwas getan ?

Mit freundlichem Gruss / Greetings / Bien a vous Otto Hell

23.05.1995

Lieber Herr Hell,  
Herr Felst (Spokesman von JADE) wird mit Herrn Sinram sprechen, ueber  
die Moeglichkeit die verbliebende Kisten entweder in der JADE-Halle oder  
in der TASSO-Halle abzustellen.

Ich bleibe jetzt von DESY weg in der Zeit 7.6-14.6.95. Ich hoffe dass  
Herr Felst eine gute Loesung in den naechsten Tagen findet.

With friendly Greetings, Jan Olsson

06.06.1995

???

Another year goes by...

Spring 1996

DESY decides to  
get rid of the  
IBM Mainframe !

Round Tapes will  
soon be History !

We learn that  
TASSO are already  
moving A-Data to  
IBM3480 Cartridges

"Official" letter to  
DESY Computer Centre

DEUTSCHES ELEKTRONEN – SYNCHROTRON **DESY**  
NOTKESTR. 85 - 22603 HAMBURG, TEL. 040/8998-0 - TX 215124 desy d - TTX 403173=DESY - FAX 040/8998-3282

DESY, Notkestraße 85 - 22603 Hamburg

Herrn Otto Hell  
DESY Rechenzentrum

Datum und Zeichen Ihres Schreibens    Aktenzeichen (bei Antwort bitte angeben)    Tel.-Durchwahl    Datum  
040/8998-3138    6. Mai 1996

Betreff    Ausgelagerte Bänder von JADE

Sehr geehrter Herr Hell,

wir wollen die noch verbleibenden JADE Daten weiterhin behalten und für diesen Zweck auf dichteres Medium umkopieren. Mit den nächsten Technologieschritten können die JADE Daten dann auf einen Formfaktor gebracht werden, der in eine Schublade paßt. Mit Hilfe des bei DESY entwickelten Datenformatierprogramms F-Pack können die Daten auch so formatiert werden, daß sie auf jedem Rechner lesbar sind.

Wir bitten daher, uns der jetzt laufenden Kopieraktion für Tasso anschließen zu dürfen. Es handelt sich um die in Halle 1 lagernden Kisten JADE0014-JADE0023.

Mit freundlichen Grüßen

R. F.    J. Olsson  
R. Felst    J. Olsson

*Kopie: Felst*

## The Plan:

- Move all remaining JADE Data  
from round tapes onto IBM3480 Cartridges
- Rewrite the JADE BOS Data in such way  
that they later can be read on any Platform  
==> **FPACK**

FPACK is a general stand-alone package of FORTRAN77 and C programs for the machine-independent input/output of data blocks. A word-format conversion between local and other word-formats is performed using a format description of the data blocks, if data are exchanged between different computers. Exchange of data is possible via networks and tapes, cassettes etc. F-records contain a record key for fast access to a subset of the data. Unformatted and formatted access is supported, in addition keyed access on certain machines. At present only 32-bit computers are supported.

Volker Blobel: FPACK Manual, Abstract

## Volker Blobel

developed FPACK for the  
H1 Collaboration.

FPACK is used on all  
levels of H1 data handling,  
from CDAQ to DST-analysis

For use by the H1 collaboration only!

Manuals: PART A For the non-expert (short manual)  
PART A+B for the expert (>50 pages)

To get a printout of the manual on the printer H01PS4 enter a \* in  
the column 1 of one of the following lines:

```
PRINT 'HERA01.H1.FPACK.MANUALA' NOHEAD DEST H01PS4 OVFL ONA COPIES 1  
PRINT 'HERA01.H1.FPACK.MANUALAB' NOHEAD DEST H01PS4 OVFL ONA COPIES 1
```

### The FPACK Idea:

#### Use of HEADERS

to Book-keep the Content,  
to ensure Platform Independence (byte order) of the Data  
to write the Data Formats together with the Data  
(i.e. the combinations of I, F, A words in the banks)

```
oooooooooooo  oooooooooo  oooooo  oooooo  oooo  oooo  oooo  
oooooooooooo  ooooooooooooo  oooooooooo  ooooooooooooo  oooo  oooo  
ooo  ooo  ooo  ooo  ooo  ooo  ooo  ooo  ooo  ooo  ooo  ooo  
oooooooooooo  ooooooooooooo  ooooooooooooo  ooo  oooooooooo  
oooooooooooo  ooooooooooooo  ooooooooooooo  ooo  oooooooooo  
ooo  ooo  ooo  ooo  ooo  ooo  ooo  ooo  ooo  ooo  ooo  ooo  
oooooooooooo  oooooo  oooooo  oooooo  oooooo  oooooo  oooooo  
oooooooooooo  oooooo  oooooo  oooooo  oooooo  oooooo  oooooo
```

Could FPACK be used for  
handling JADE Data in the  
Post-IBM\_Mainframe Era ?

F - package for input/output (Version 0.89/00)

1. September 1994

## Use of FPACK in JADE was not so trivial !

- FPACK works together with **BOS77**
- JADE data handling programs use **BOS4** !  
  
==> Need an FPACK version which works with BOS4
- By 1995, the BOS4 libraries F1EBLO.BOSLIB.S/L  
**no longer existed!**  
(Although "Holy", they had been  
deleted from the Catalogue !)
- Volker Blobel had no private copy (!)

# Solutions:

- Worldwide Search in the former JADE Collaboration:  
Do you have a copy of F1EBLO.BOSLIB.S/L ?
- A copy of F1EBLO.BOSLIB.L was found on a KEK FACOM Computer, but, although the FTP transfer to DESY was successful (Thanks Kanzaki-san!) it could not be used on the DESY IBM Mainframe
- Meanwhile O.Hell found a copy of F1EBLO.BOSLIB.S
- But, it would not compile!  
Not with any of the compilers on the IBM Mainframe!
- Only after Modifications (with help of Volker Blobel) did the compilation succeed...
- FPACK-ing of the JADE Data could proceed...

1) Record header  
-----

word	content
1	NRECDW number of words in record (including this word)
2	NUSEDW number of used words, following

**Record Header**

2) Record segment header  
-----

word	content	
1	pattern to recognize byte swapping (4,3,2,1)	
2	format code / origin code	
3	record number (*100 + position)	bytes
4	name1 (hollerith) (chars 1...4)	key 1 1...
5	name2 (hollerith) (chars 5...8)	key 2
6	number1	key 3
7	number2	key 4
8	physical record number within logical record	key 5 ...20
9	dataword	
10	segment code (0..3)	
11	number of words following for this segment in this record	

**Record Segment Header**

**FPACK Headers**

3) Data segment header  
-----

word	content
1	number of words incl format words
2	name1 (hollerith) (chars 1...4)
3	name2 (hollerith) (chars 5...8)
4	number of bank
5	number of columns (NCOL) (optional)
6	number of rows (NROW) (optional)
7	data segment code (0,1,2,3)
8	number of data words in previous subsegments
9	number of data words in this subsegment
10	1 format (hollerith) (chars 1...4)
...	2 ...
...	...

Remarks: The segment header is always completely in one record (no splitting over record boundaries). There is always a segment header after the record header in words 1 and 2 of a record.

**Data Segment Header**

← **The Bank Format !**

# The JADE BOS Banks

**Raw Data Banks:** HEAD, SCAL, TRIG, LATC, ATST, ATOF, ALGL, JETC, MUEV, ATAG, TAGC, FAMP, J68K, N50S, BPCH, ZETC, ZTRG, VPAR, JETV, C068...

All 16-bit Banks

**Reconstruction Banks:** PATR, JHTL, LGCL, ALGN, ACLS, TAGG, TOFR, ZVTX, MUR1, MUR2, JHTQ, DEDX, GVTX, KOKS, TPEV, TPVX, TPTR, ZE4V, ...

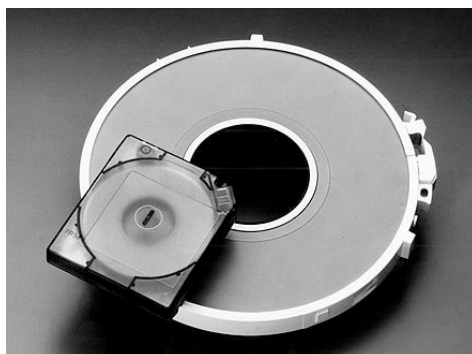
Mixed Format  
(I\*2, I\*4, F, A)

Highly non-trivial Bank Formats !

**Decision:** Fpack Raw Data as B16, Rec. Data as B32  
==> When later reading the JADE Data,  
need specific unpacking routine  
for each JADE Reconstruction Bank

## Spring 1997:

- The DESY IBM Mainframe is officially closed.
- Only 2 people are working on the (partially reduced) machine (Dieter Lüke (TASSO) and Jan Olsson (JADE))  
The DESY Computer Centre is since long involved in the Data Saving action, and gives unending Support!
- The JADE Bos Data are FPACK-ed  
and written to 600 IBM3490 Cartridges  
(800 MB, 6 x smaller than A-tape)



A second copy  
was written to  
200 Exabyte  
Cartridges (2.5 GB)

Summer  
1997

## FPACK-ed JADE Data Sets, saved for the Future

REDUC1  
REDUC2  
NEUSUM  
RED2NEU  
REFORM (JDATA16, 17: part of 1986 raw data)  
TPMH (TP-ed, Multihadron selections)  
LUMI (i.e. Bhabha events separately collected)  
RANDOM Trigger data

### Question:

Was this action actually needed ?

What about 4-Vector Data (ZE4V) for Multi-Hadron events ?

Since the end of the 1980's,  
ZE4V-Data sets had been kept alive:  
F11ECK.ZE4V.V987.E....DAT...  
F11ECK.ZE4V.V588.E....DAT...  
4-Vector info, for JADE Multi-Hadron Data,  
calibrated and reconstructed in the TP-program

### Spring 1996:

- P.Fernández (student), P.Pfeifenschneider (Postdoc) from RWTH Aachen will do JADE Analysis
- ZE4V Data Sets were read<sup>1</sup> on the IBM Mainframe, converted to ASCII Data Sets and moved to RWTH Aachen

<sup>1</sup>With BOS 77 !

$\langle \sqrt{s} \rangle [\text{GeV}]$	$\sqrt{s}$ -range[GeV]	period	$\mathcal{L} [\text{pb}^{-1}]$	MH data
14.0	14.0	Jul.-Aug. 1981	1.46	1734
22.0	22.0	Jun.-Jul. 1981	2.41	1390
34.6	33.8 - 36.0	Feb. 1981 - Aug. 1982	61.7	14372
35.0	35.0	Feb.-Nov. 1986	92.3	20925
38.3	38.3	Oct.-Nov. 1981	8.28	1587
43.8	43.0-46.6	Jun. 1984 - Oct. 1985	28.8	3940

Since 1998, 10 JADE-Publications and 3 JADE-Theses  
are based on these ZE4V Data Sets

Thus, do we really need the Full Event Data ?

- YES:**
- Cross-check of Event Selection and Reconstruction
  - Vary Selection Cuts ==> Systematic Errors!
  - Possibility to redo Calibration, Reconstruction,  
Event Scanning, Background Studies ...

And the years pass by (8  $\frac{1}{2}$  years) .....

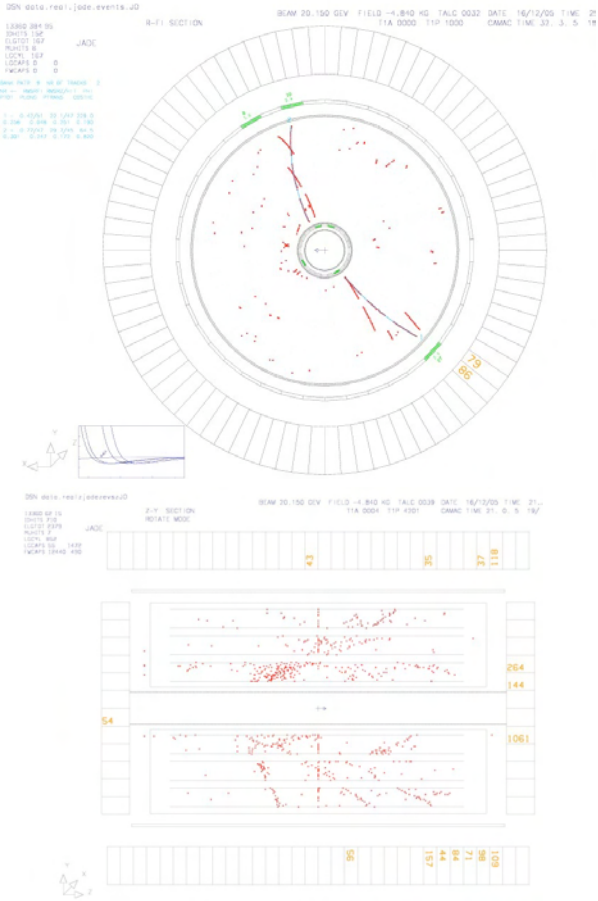
December 2005:

- The Exabyte Cartridge Collection (in the J.O. Office)

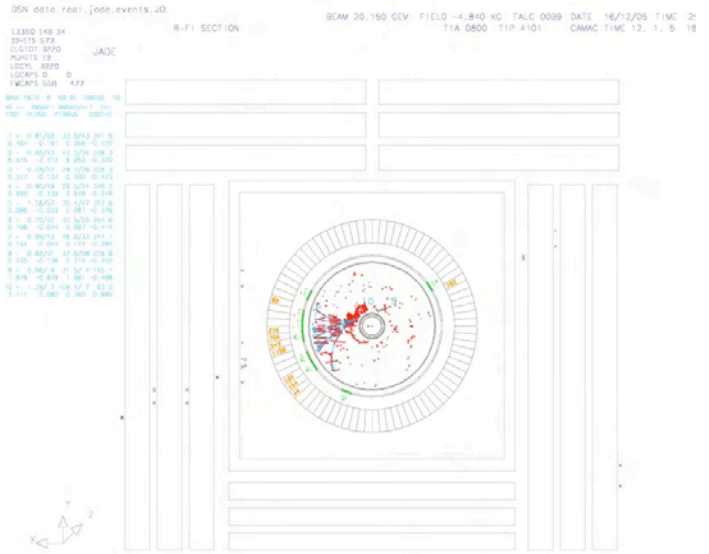


traveled to MPI Munich, was transferred to disk, and is now a (very very small) part of the ATLAS Data Storage.

- Programs were developed to read the FPACK-ed Data, and to convert each of the JADE BOS Banks into the original sequences of I\*4, I\*2, F and A data.
- Possible to scan REDUC1 Data again, in the JADE Event Display...



# JADE REDUC1 Data, now in colour !



**In 15 years:**  
**From a room full of A-tapes,**  
**to**  
**A small box on your desk !**

**The JADE Data in your pocket...**



STERN 26/97



# The JADE Software

## JADE Software Revival

Pedro Movilla Fernández

**Purpose:** Simulate JADE events,  
using generated 4-vectors from  
new MC generators

JADE Computer Note 103  
Sep 20th, 2003

A Guide to the  
Resurrected JADE Data and Software

Pedro A. Movilla Fernández



Started already  
1996-97:  
RWTH Aachen,  
later in MPI Munich

## JADE Standard

### Libraries

F11LHO.JADEGS  
F11GOD.PATRECSR  
JADELG.SOURCE  
JADEPR.JADESR  
F22NAR.TOFLIB.S  
F22ALL.JADEMUS  
F22KLE.VERTEX.S  
F22KLE.WERTEX.S  
F22ELS.JMC.S  
F11LHO.TAGG.S  
F22YAM.TPSOURCE  
F22BOW.TP9.S  
...  
F22RJB.RLMC.S !!!  
...  
DESYLIB,CERNLIB  
BOSLIB

## JADE Data Base

F11LHO.CALUPDAT.S  
F11LHO.LHOLIB.S  
F11PST.CALUPDAT.S  
F11LHO.AUPDAT1 (AUPDAT0)  
F11LHO.BUPDAT0 (BUPDAT1)

Pure  
FORTRAN !

## JADE Graphics

F11LHO.GRAFIX.S  
PLOT10 (only manual)

In Spite of Hell's DDS,  
all of these libraries  
and files were still alive  
(with one exception)  
at the end of the  
DESY IBM Mainframe 1997

They survived, since 1991, as personal copies:  
F11OLS.F22ALL.JADEMUS, etc...

## 1997: Saving the JADE FORTRAN Software

### Moving from the DESY IBM Mainframe to Unix platforms

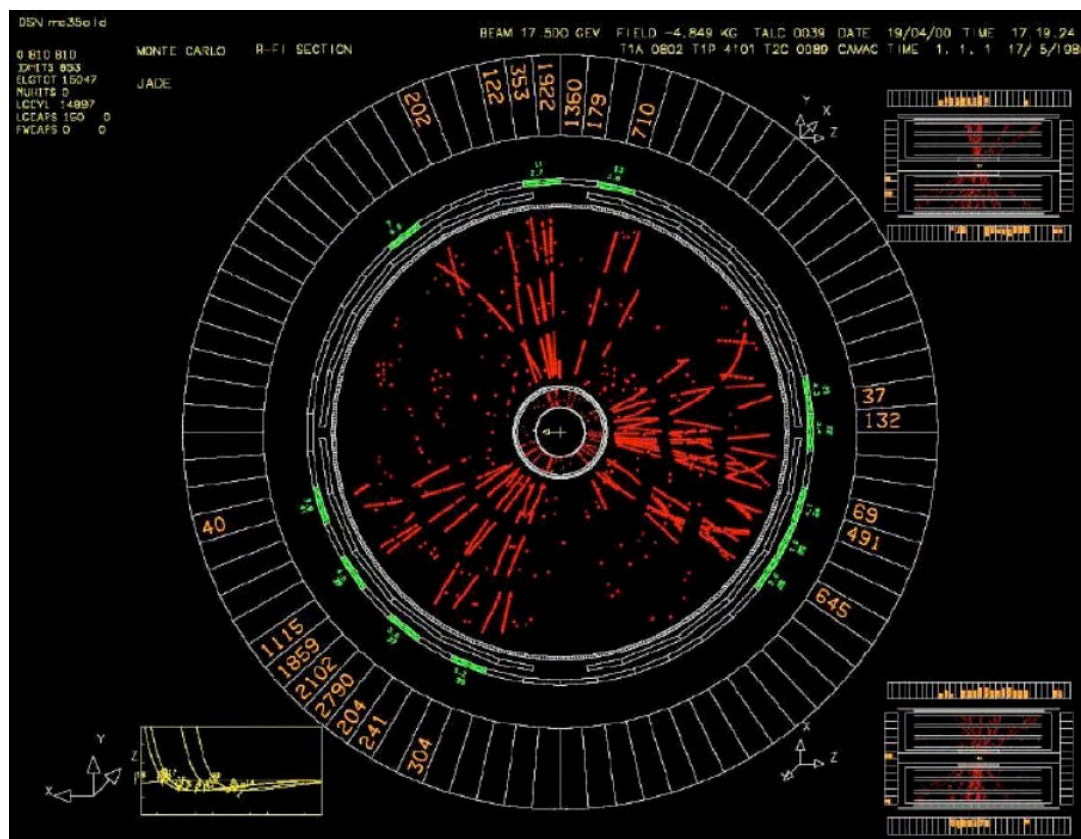
- Keep FORTRAN routines as they are
- Pre-Compilers SHELTRAN, MORTRAN:  
Save the Precompiler Output (pure FORTRAN)
- Calibration Files are Binary Files:  
Write them as formatted ASCII Files,  
taking care that precision is sufficient in all words
- DESYLIB was Assembler Code  
Emulate Functionality with Fortran routines  
(actually only MVCL needed new code)



## JADE Software on Unix

- The JADE Software is very economic
  - ==> Information bit-coded, often into 16-bit words
- Bits are addressed directly in the data (PATREC !)
- Disastreous on a Machine with different Byte order !
  - ==> The JADE SW Revival in MPI Munich was made on IBM AIX Machines :  
Byte order the same as on IBM 370 !
- Otherwise no problems,  
Implementation on other Platforms  
should be straightforward

Nov.  
1999



**JADEZ running again ! Software Revival successful !**

## The "Disaster":

The JADE Luminosity Files had been deleted!

```
//GO.FT01F001 DD DISP=SHR,DSN=F22TAK.DISK.BRLLUMI.G001519
// DD DISP=SHR,DSN=F22TAK.DISK.BRLLUMI.G520733
// DD DISP=SHR,DSN=F22TAK.DISK.BRLLUMI.G734956
// DD DISP=SHR,DSN=F22TAK.DISK.BRLLUMI.G0957.G1091
// DD DISP=SHR,DSN=F22TAK.DISK.BRLLUMI.G1092.G1243
// DD DISP=SHR,DSN=F22TAK.DISK.BRLLUMI.G1244.G1642
```

Actually, these files are not needed for the Software to run,  
"only" for the Cross Section Calculations

A "Worldwide" Search in the JADE Collaboration  
(including Kawagoe-san, the last JADE Lumi expert)  
gave no result, the Files were gone !



Resort to Olsson's Backup System:  
Folder with Printout on Paper  
of Important Data !

RUNS		BEAM	BARREL	LUMINOSITY
13856	13864	20.840	0.474029E+02 +-	0.779300E+01
13865	13872	20.855	0.538850E+02 +-	0.831464E+01
13873	13885	20.870	0.719484E+02 +-	0.961450E+01
13886	13895	20.885	0.694769E+02 +-	0.945461E+01
13896	13906	20.900	0.579792E+02 +-	0.864303E+01
13907	13919	20.915	0.516098E+02 +-	0.816022E+01
13920	13931	20.930	0.555588E+02 +-	0.847264E+01
13932	13941	20.945	0.465800E+02 +-	0.776333E+01
13942	13953	20.960	0.285056E+02 +-	0.607743E+01
13954	13963	20.975	0.609841E+02 +-	0.889545E+01
13964	13973	20.990	0.519744E+02 +-	0.821787E+01
13974	13980	21.005	0.442404E+02 +-	0.758717E+01
13981	13989	21.020	0.508176E+02 +-	0.813734E+01
13990	13998	21.035	0.678519E+02 +-	0.940937E+01
13999	14009	21.050	0.770938E+02 +-	0.100368E+02
14011	14021	21.065	0.667339E+02 +-	0.934461E+01
14022	14031	21.080	0.497930E+02 +-	0.807749E+01
14032	14043	21.095	0.524870E+02 +-	0.829892E+01
14044	14054	21.110	0.499324E+02 +-	0.810010E+01
14055	14065	21.125	0.467388E+02 +-	0.772225E+01

However, Printout was too weak to be used in OCR,  
instead typed by hand !

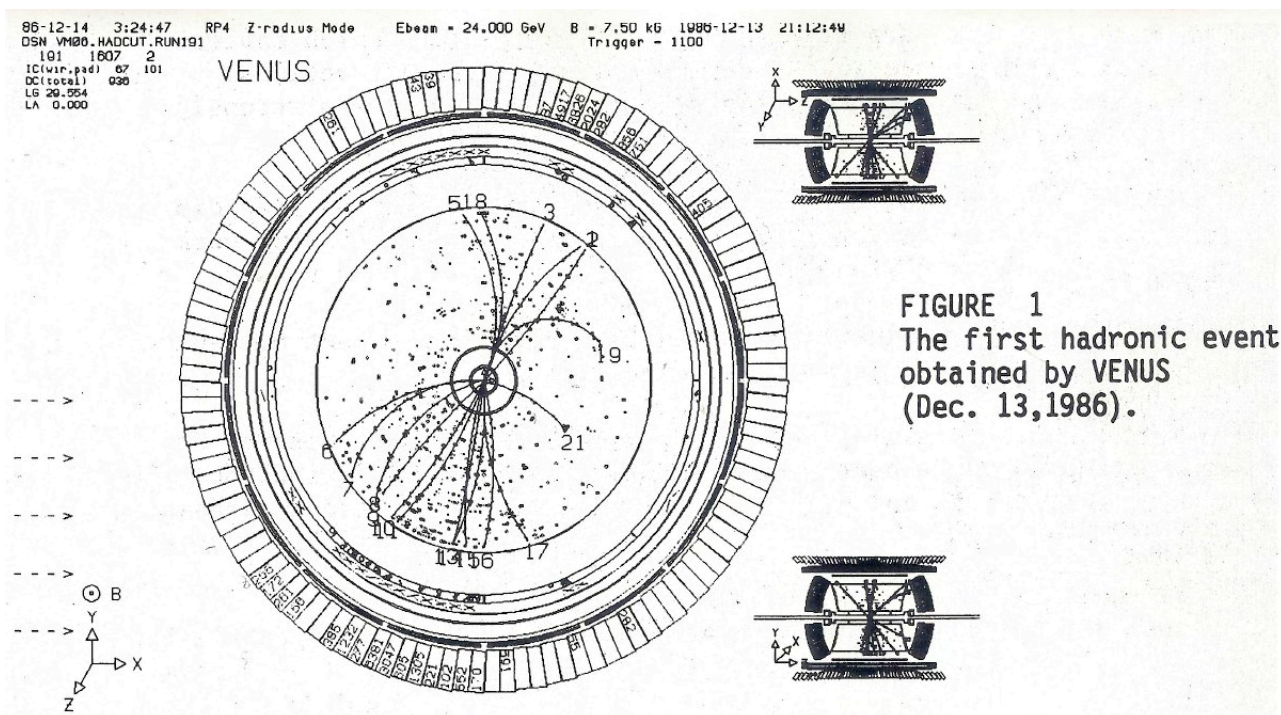


**Moral:** Always keep a printout as backup !  
(and never throw papers away...)

# JADE Software Revival

## What is still missing ?

- Vertex Chamber Software (MORTRAN): Not yet touched
- JADE Z-Chamber Software (Susan Cartwright):  
Never really implemented in the standard SW
- Muon MC Software: Is it really lost ?  
**F22RJB.RLMC.S** What about the OPAL Muon MC ?  
(is it based on the JADE Muon MC ?)  
What about the VENUS Muon MC ?



From Conference Proceedings, Lepton-Photon-1987 (Hamburg)  
(did they adopt all of the JADE software ?)

# Conclusions

Successful (and so far unique) Example  
of Data Preservation in a HEP experiment

Some Reasons for the Success:

- JADE Software is very simple:  
Only FORTRAN, almost no "foreign software"
- JADE Data Base SW home-written, plain FORTRAN
- Calibration and other Detector Data available in "flat files"
- Multi-Platform Data Handling SW (FPACK) was available
- A key person, with the  
necessary detailed knowledge of Data and Software,  
volunteered to do the job ...
- A professor, with students, saw the Potential of the Data !



# Conclusions, continued

The Saving of the  
JADE Data and Software  
is now Inspiration for a  
Worldwide Initiative of Saving  
Experimental Data and Software  
also in other HEP Experiments

DPLTA Workshops:

DESY January 2009

SLAC May 2009



**First Workshop on Data Preservation and Long Term Analysis in HEP**

DESY, Hamburg, Germany  
Mon 26<sup>th</sup> - Wed 28<sup>th</sup> January 2009

**Objectives of the Workshop**  
Review the physics objectives of data persistency in HEP  
Exchange information on the analysis model used by HEP experiments  
Address the hardware and software persistency issue  
Review the funding programs and other existing international initiatives  
Converge to a common set of recommendations for future experiments

<http://indico.cern.ch/conferenceDisplay.py?confId=42722>

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HEP-IT: Takahashi (DESY)  
CERN: TT: Scharf (CERN)  
CERN/PAISE: Scharf (CERN)



(Backup)



JADE Control Room, c:a 1984-85

