A USER'S GUIDE TO
PARTICLE PHYSICS COMPUTER-SEARCHABLE DATABASES
ON THE SLAC-SPIRES SYSTEM

Particle Data Group

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Abstract -- This report discusses five computer-searchable databases located at SLAC which are of interest to particle physicists. These databases assist the user in literature-searching, provide numerical data extracted from papers, and contain information about experiments. We describe the databases briefly, tell how to use the SPIRES database management system to access them interactively, and give several examples of their use.
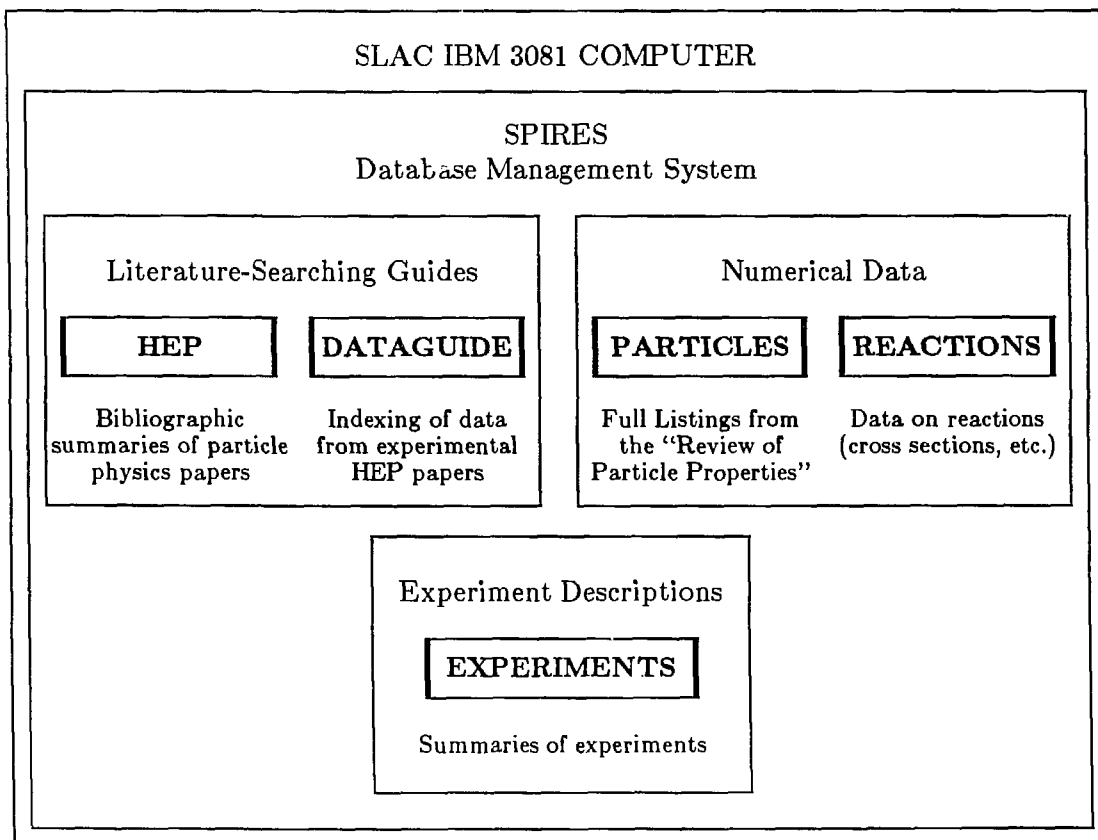
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The Berkeley and United Kingdom Particle Data Groups, in collaboration with numerous other groups and institutions, have developed four computer-searchable databases of interest to particle physicists. These databases assist the user in literature-searching, provide numerical data extracted from papers, and contain descriptions of experiments. They thus give much additional information relating to many of the papers contained in the "HEP" database, which has been developed over the years by the SLAC Library and is now maintained by SLAC and DESY. All five of these databases reside on the SLAC IBM 3081 computer and are managed by the SPIRES database management system. In the following sections, we describe the databases briefly, tell how to use SPIRES to access them interactively, and give several examples of their use.

Some of the databases are of long standing and some are new. We hope that you will try to use them and tell us of successes, failures, problems, etc. Suggestions for improving this guide would also be appreciated. Because of the differing histories of the databases, there are unfortunately some inconsistencies among them. We plan eventually to correct most of these.

The Databases

The figure shows the five databases. HEP and DATAGUIDE are literature-searching guides to

SLAC IBM 3081 COMPUTER

SPIRES
Database Management System

Literature-Searching Guides

HEP	DATAGUIDE
Bibliographic summaries of particle physics papers	Indexing of data from experimental HEP papers

Numerical Data

PARTICLES	REACTIONS
Full Listings from the "Review of Particle Properties"	Data on reactions (cross sections, etc.)

Experiment Descriptions

EXPERIMENTS

Summaries of experiments

help the user find desired papers; PARTICLES and REACTIONS contain actual numerical data extracted from papers; and EXPERIMENTS contains information about experiments.

The description of each database below gives the name by which it is accessed, the type of information it contains, the time period covered, the group responsible for maintenance, the frequency of updating, the kinds of searches which are possible (i.e., the criteria one may use to look for information of interest), and any associated publications.

HEP
Contains bibliographic summaries of ~150,000 particle physics papers (journal articles, preprints, reports, theses, etc., at the rate of about 15,000/year). Covers 1974 to the present. Maintained by the SLAC Library, in collaboration with the DESY HEP Index Group. Updated daily. Searchable by author, institution, title, topic, report number, citation, etc. The database for the weekly "Preprints in Particles and Fields" (PPF), available from the SLAC Library.

DATAGUIDE
Contains indexing, by type of data reported, of ~10,000 particle physics papers that contain data. Covers 1976 to the present. Maintained by the Berkeley Particle Data Group (PDG), in collaboration with the Serpukhov COMPAS Group. Updated weekly. Searchable by reaction, lab momentum, c.m. energy, particle studied, accelerator, detector, and other items. The database for the publication "A Guide to Data in Elementary Particle Physics," LBL-90.[1]

PARTICLES
Contains the Full Listings (~40,000 lines of information), but not the Summary Particle Properties Tables, from the "Review of Particle Properties."[2] Covers the same years as the Review. Maintained by the Berkeley PDG, in collaboration with the entire authorship of the Review. Updated approximately every year (once or twice between editions of the Review). Searchable by particle and particle property.

REACTIONS
Contains numerical data on reactions from ~2000 papers; cross sections (differential and total), structure functions, polarization measurements, and many other items from most current aspects of experimental particle physics are included. Currently covers 1978 to the present. Compiled by the United Kingdom Particle Data Group (Univ. of Durham and Rutherford Appleton Lab), in collaboration with the Serpukhov COMPAS Group; U.S. distribution by the Berkeley PDG. Updated approximately annually. Searchable by first author, reference, reaction, lab momentum, quantity measured, final state particle.

EXPERIMENTS
Contains summaries of ~1200 approved experiments at the major particle physics labs. Covers approximately 1975 to the present. Maintained by the Berkeley PDG, in collaboration with correspondents at the various labs. Updated periodically. Searchable by experiment number, author, accelerator, detector, reaction, momentum, journal paper, etc. The database for the publication "Current Experiments in Elementary Particle Physics," LBL-91.[3]

Accessing the Databases

Anyone who has an account on the SLAC IBM 3081 computer can access these databases. If you have an account but are unfamiliar with SPIRES, a "Guide to VM SPIRES" is available from the SLAC Library, Bin 196, SLAC, P.O. Box 4349, Stanford, CA 94305, USA (phone: 415/854-3300, ext. 2411). If you do not have an account and cannot find anyone who does (at main laboratories, ask at the library), contact Louise Addis of the SLAC Library; you can also get information about using various networks, such as TYMNET, from the same source. If you just want to try out the system, contact us about using a temporary guest account: Particle Data Group, 50-308, Lawrence Berkeley Laboratory, Berkeley, CA 94720, USA (phone: 415/486-4723, or FTS 451-4723).

In the following description, words *not* enclosed in angular brackets < > are to be typed as given (only the letters in **BOLDFACE UPPER CASE** are needed, and these may be entered in upper or lower case). Words in angular brackets are "variables" for which the user substitutes an appropriate value, again in either upper or lower case (the brackets are *not* typed).

* * * * * * * * * * *

If you will be communicating with the SLAC computer at 1200 BAUD or less (such as over telephone lines or with a hardcopy terminal), you will probably want to run in line-by-line mode, in which case you need to set your terminal/modem for half-duplex operation. If you will be communicating at a speed greater than 1200 BAUD, you will probably want to run in full-screen mode, in which case you need to use full-duplex, even-parity, 7-data-bit operation. You will usually connect to the computer through the "MICOM switch," which will ask you what "class" you want. If you are set up for line-by-line mode, type:

> **VMLINE**

If you are set up for full-screen mode, type:

> **VM24**

In full-screen mode, you will then be asked to type a carriage return, and for the kind of terminal you are using (e.g., VT100 or ADM3A). Finally, in either mode, type an extra carriage return after you see the message VM/370 ONLINE.

Note that in full-screen mode, whenever the screen fills up (indicated by the word MORE at the bottom), you may clear it by hitting the CLEAR key (which may be ENTER, CONTROL-L, or CONTROL-Z on your terminal); if you don't explicitly clear the screen, it will do so automatically after a minute or so (you can hold the screen indefinitely by hitting a carriage return). Also, if you are listing out information and want to abort the listing, type in HT and a carriage return before hitting the CLEAR key. In line-by-line mode, you can abort a listing with the BREAK or ATTN key.

After going through the above connection procedure, log on to the computer by typing:

> Logon < your-account >
>> (e.g., Logon **JDOE**)

Then type your password when asked for it (it will not show on your terminal), and finally type an extra carriage return after the system gives its introductory messages.

* * * * * * * * * * *

To enter the SPIRES system, type:

> **SPIRES**
>> (special SPIRES-only accounts, ending in the letters SPI, don't need to do this)

To get a detailed explanation of how to use a particular SPIRES command, type:

> **EXP**lain < command-word >
>> (e.g., **EXP**lain **FIND**, **EXP**lain **EXPLAIN**, **EXP**lain **EVERYTHING**)

To get an explanation of a particular database, type:

    EXPlain <database-name>
        (e.g., **EXPlain HEP**)

To access the database of interest, type:

    SELect <database-name>
        (e.g., **SELect EXPERIMENTS**)

To find out what indices are available for searching in the selected database (and the various index names you may use to refer to them), type:

    SHOw INDex

To see a random selection of values in an index (and thus determine the form to use for a search value), type:

    BROwse <index-name>
        (e.g., from DATAGUIDE: **BROwse Particle**)

To see a selection of values in an index near a particular value (perhaps to see if a value in which you are interested is valid, or to see nearby values), type:

    BROwse <index-name> <value>
        (e.g., from DATAGUIDE: **BROwse Particle UPSI**)

To search for papers/sections-of-RPP/experiments satisfying certain criteria, type:

    FINd <index-name> <value> **AND(OR)** <index-name> <value> ...

Some sample searches, drawn from the various databases indicated, are:

From HEP:

    FINd Report-num SLAC-PUB-3164

    FINd Author RUBBIA AND Date AFTER 1982

    FINd Title HIGGS
        This finds any paper with HIGGS as part of the title.

From DATAGUIDE:

    FINd DETector OMEGA OR OMEGAPRIME

    FINd REaction "PI- P --> PI0 N" AND ECM 3 TO 4
        Note that the "arrow" here is composed of two minus signs and a greater-than sign, and that energies (momenta) are always given in GeV (GeV/c). Note also the quotes which are required here and in several of the following examples; for an explanation, see the discussion below on *Searching Problems*.

    FINd REaction PI- P#
        This gets all reactions with $\pi^- p$ as the initial state, regardless of the final state.

    FINd Particle "UPSI(9460)"

    FINd Final-State-Part "CHI2(3555)"

From PARTICLES:

> FINd Part-Prop "DELTA(1232) WIDTH"

From REACTIONS:

> FINd REaction "P P --> P P" AND OBServable DSIG/DT AND PLAB GT 10

From EXPERIMENTS:

> FINd EXPeriment-num CERN-UA-001

> FINd CITation "PRL 46 (1981) 1115"
> > Note that the above form, with spaces but no commas between the elements, must be used.

Searching Problems: If your search does not find any results, there are two common reasons why it may have failed spuriously. (1) You may have used an incorrect form for the value for which you were searching (e.g., an incorrect particle name). To find out the correct form, use the BROWSE command for the index you are searching (see above). Note, in particular, that in reaction and particle searches, an antiparticle name is formed by following the corresponding particle name with BAR (thus the antiproton is written as PBAR); in HEP title searches, particle names are somewhat variable in their spelling, and several forms may be used. (2) Any search value containing any of the special characters ( ) < > = must be enclosed in quotes "; see the examples above.

After entering a FIND command, you will be told the number of papers, sections of RPP, or experiments satisfying the criteria given. At this point, you have several options:

(1) You may list out the information available for these results by typing:

> **TYPe** (or **TYPe PAUse** if you are in line-by-line mode on a CRT terminal)

[Recall that you may abort a long listing by hitting the BREAK or ATTN key if you are in line-by-line mode, or by typing HT followed by a carriage return followed by the CLEAR (ENTER, CONTROL-L, or CONTROL-Z) key if you are in full-screen mode.]

If your institution is on BITNET, you may enter

> **SET ACTive MY FILE**
> **OUT CLEAR**
> **SENDFILE MY FILE TO** <your home user-id> **AT** <your home node>

which will transmit the results to you over BITNET.

Or (2) you may narrow the list already found (i.e., add more selection criteria) by typing:

> **AND** <index-name> <value>

Or (3) you may broaden the list already found (i.e., include more cases) by typing:

> **OR** <index-name> <value>

Or (4) you may initiate a new search with a new FIND command, or issue any other command.

To terminate the session and log off the computer, type:

> **CP LOGoff**

Some Examples of Database Use

We show below a short example session for each of the five databases. The **boldface** phrases are those typed in by the user; we show the fully spelled out form of the commands, although the abbreviations discussed above may be used freely. Since the databases are regularly updated, some of the queries shown may produce different results when you try them.

A HEP Database Example

```
->
SELECT HEP
-Command logging in effect for this subfile
->
SHOW INDEX
Goal - Index:  DOCUMENT
    Qualifier:  D, DATE
    Qualifier:  PPF-SUBJECT, PS, SCL
Simple Index:  A, AU, AUTHOR, N, NAME
Simple Index:  CN, COLLAB-NAME, COLLABORATION
Simple Index:  AF, AFF, AFFIL, AFFILIATION, INST, INSTITUTION
Simple Index:  T, TI, TITLE, WITH-LANGUAGE
Simple Index:  HEP-TOPIC, K, KEYWORD, TOPIC, TP
Simple Index:  C, CITATION, CITED, JOUR-VOL-PAGE, JV?
Simple Index:  BROWSE-ONLY-INDX, CODEN, J, JOURNAL-CODEN
Simple Index:  R, REPORT-NUM, REPT, RN
Simple Index:  SLAC-TOPICS, STP
Simple Index:  JI, JINDEX, JOURNAL
Simple Index:  ANTIPPF, PPA
Simple Index:  PPF, PPFLIST#
Simple Index:  EXP, FE, FERMILAB-EXP, FN1
Simple Index:  SD, SE, SLAC-DETECTOR, SLAC-EXPERIMENT
Simple Index:  CODE1, DESY-CLASS-CODE
Simple Index:  E, ENERGY, ENERGYRANGE-CODE
Simple Index:  DRN
Simple Index:  SSC
Simple Index:  CA, CORP-AUTHOR, CORPORATE-AUTHOR
Simple Index:  DATE-UPDATED, DU
->
BROWSE TITLE SUPERSYMMET
SUPERSTRING
SUPERSTRING-SUPERSTRING
SUPERSTRINGS
SUPERSTRONG
SUPERSTRUCTURE
SUPERSYMMETRIC
SUPERSYMMETRICAL
SUPERSYMMETRIES
SUPERSYMMETRIZATION
SUPERSYMMETRIZED
-More?
NO
->
FIND TITLE SUPERSYMM#          <--- Looks for all titles having
-Result: 2472 DOCUMENTS             words starting with supersymm
->                                  (# is wildcard symbol).
AND DATE AFTER JUNE 1986
-Result: 20 DOCUMENTS
->
TYPE PAUSE

THE SEARCH FOR SUPERSYMMETRY AT THE TEVATRON AND SSC.
By R.Michael Barnett (LBL, Berkeley), Howard E. Haber (UC, Santa Cruz
& SLAC), LBL-21947, Aug 1986. 11pp.
Invited talk given at Physics Simulations at High Energy Workshop,
Madison, WI, May 5-16, 1986.
-
SEARCH FOR SINGLE ELECTRONS FROM SUPERSYMMETRIC PARTICLE PRODUCTION.
By E. Fernandez, W.T. Ford, N. Qi, A.L. Read, Jr., J.G. Smith
-
                              .
                              .
                              .

->
```

```
FIND AUTHOR FEYNMAN, R
-Result: 20 DOCUMENTS
->
AND TITLE CARGO CULT
-Result: 1 DOCUMENT
->
TYPE

CARGO CULT SCIENCE.
By Richard P. Feynman, RX-723, n.d. (recd Sep 1975) 4pp.
Published in Engineering and Science, p. 10-13, June 1974 (reprint).

->
FIND T TAU AND A PERL
-Result: 13 DOCUMENTS
->
AND JOURNAL PHYS.LETT.#            <--- Looks for papers published
-Result: 1 DOCUMENT                     in Physics Letters.
->
TYPE

PROPERTIES OF THE PROPOSED tau CHARGED LEPTON.
By Martin L. Perl, G.J. Feldman, G.S. Abrams, M.S. Alam, Adam M.
Boyarski, Martin Breidenbach, J. Dorfan, William Chinowsky, G.
Goldhaber, G. Hanson, J. Jaros, J.A. Kadyk, D. Luke, V. Luth, R.
Madaras, H.K. Nguyen, J.M. Paterson, I. Peruzzi, M. Piccolo, T. Pun,
Petros A. Rapidis, Burton Richter, W.M. Tanenbaum, J. Wiss (SLAC &
LBL, Berkeley & UC, Berkeley), SLAC-PUB-1997, Aug 1977. 14pp.
Published in Phys.Lett.70B:487,1977.

->
BROWSE CODEN PHYSICS LETTERS
PHYSICAL REVIEW (PHRVA)
PHYSICAL REVIEW LETTERS (PRLTA)
PHYSICS (PYCSA)
PHYSICS EDUCATION (PHEDA)
PHYSICS IN MEDICINE AND BIOLOGY (PHMBA)
PHYSICS LETTERS (PHLTA)           <--- Coden is in parentheses.
PHYSICS OF FLUIDS (PFLDA)              Use for citation search.
PHYSICS REPORTS (PRPLC)
PHYSICS REPORTS (SECTION C OF PHYS.LETTERS) (PRPLC)
PHYSICS TODAY (PHTOA)
-More?
NO
->
FIND CITATION PHLTA,70B,487
-Result: 60 DOCUMENTS         <--- Preprints which cited the above tau paper.
->
BROWSE COLLABORATION CELLO
CCFRR NEUTRINO COLLABORATION
CCHK COLLABORATION
CCHKK AND ACCDHW COLLABORATIONS
CCOR COLLABORATION
CDF COLLABORATION
CELLO COLLABORATION
CERN MUON STORAGE RING COLLABORATION
CERN SOVIET COLLABORATION
CERN-ANNECY (LAPP)-GENOA-COPENHAGEN-OSLO-UNIVERSITY COLL. (LONDON) COLLABORATION
-More?
NO
->
FIND CN CELLO#
-Result: 40 DOCUMENTS
->
TYPE PAUSE

A SEARCH FOR SINGLE PHOTONS AT PETRA.
By CELLO Collaboration (H.J. Behrend, et al.), LAL-86/11, n.d. (recd
Jun 1986) 17pp.
Submitted to Phys. Lett.
 -
```

.
.
.

A DATAGUIDE Database Example

```
->
SELECT DATAGUIDE
-Command logging in effect for this subfile
->
SHOW INDEX
Goal - Index:    PAPER
Simple Index:    AC, ACC, ACCELERATOR
Simple Index:    DE, DET, DETECTOR
Simple Index:    PL, POL, POLARIZATION
Simple Index:    RE, REA, REAC, REACTION
Simple Index:    FINAL-STATE-PART, FSP
Simple Index:    PLAB
Simple Index:    ECM
Simple Index:    DD
Simple Index:    P, PART, PARTICLE
Simple Index:    PP
Simple Index:    PR
Simple Index:    AUTH-YEAR, ID
Simple Index:    D, DATE
->
BROWSE RE
E- N --> E- N RHOO
K+ P --> 7CHARGED MULT(K*(892)+)
N C --> DBARO X
NUMUBAR NUCLEUS --> 2MU+ X
PBAR P --> KO NEUTRAL(S) 3PI+ 3PI-
PI+ PB --> P X
PI- P --> CHGD-HADRON(S) X
TI --> PI- X
->
BROWSE RE NUMU P
NUMU NUCLEUS --> 2MUON X
NUMU NUCLEUS --> 2P X
NUMU NUCLEUS --> 2PI+ PI- PIO X
NUMU NUCLEUS --> 3MUON X
NUMU NUCLEUS --> 3P X
NUMU P
NUMU P --> .GT.4PRONG MU-
NUMU P --> .LT.6PRONG LAMBDA MU- 2PI+ PI-
NUMU P --> .LT.6PRONG LAMBDA/C+ MU-
NUMU P --> A1(1270)+ MU- F
-More?
NO
->
FIND RE "NUMU P --> NUMU X"
-Result: 7 PAPERS
->
OR RE "NUMU P --> MU- X"
-Result: 20 PAPERS
->
BROWSE ACC FERMI
DESY
DESY-DORIS
DESY-LINAC
DESY-PETRA
ETHZ
FNAL
FNAL-TEV
FRAS
FRAS-ADONE
GANIL
-More?
NO
->
AND ACC FNAL
-Result: 8 PAPERS
->
TYPE

-Command logging in effect for this subfile
THE ANTI-NEUTRINO n AND ANTI-NEUTRINO p INTERACTIONS IN NEON NUCLEUS: TOTAL
CROSS-SECTION RATIO AND QUARK - PARTON ANALYSIS.
By A.E. Asratian, V.I. Efremenko, A.V. Fedotov, P.A. Gorichev, G.K.
Kliger, V.Z. Kolganov, S.P. Kruchinin, M.A. Kubantsev, I.V.
Maklyueva, V.I. Shekelian, V.G. Shevchenko (Moscow, ITEP), V.V.
Ammosov, V.S. Burtovoy, A.G. Denisov, G.S. Gapienko, V.A. Gapienko,
V.I. Klyukhin, V.I. Koreshev, P.V. Pitukhin, V.I. Sirotenko, E.A.
Slobodyuk, Z.U. Usubov, V.G. Zaets (Serpukhov, IFVE), ITEP-187-1984, 1984.
47pp.
Moscow Inst. Theor. Exp. Phys. Gkae - ITEF-84-187 (84,REC.MAR.85) 47p.
```

<ACCELERATOR> FNAL   <DETECTOR> HLBC-15FT-HYB

<REACTIONS STUDIED>	ECM(GEV)	PLAB(GEV/C)
NUMUBAR N --> MU+ X	4.436 - 19.41	10 - 200
NUMUBAR P --> MU+ X	4.432 - 19.40	10 - 200
NUMU N --> MU- X	4.436 - 19.41	10 - 200
NUMU P --> MU- X	4.432 - 19.40	10 - 200

<EXPERIMENTAL COMMENTS> 6774 ANUMU NE INTERACTIONS, WIDE BAND BEAM <E>=35 GEV

****

NEUTRAL CURRENTS IN THE ANTI-NEUTRINO EXPERIMENT AT THE 15-FOOT BUBBLE CHAMBER.
(In Russian)
By P.A. Gorichev, V.I. Efremenko, G.K. Kliger, V.Z. Kolganov, S.P.
Kruchinin, M.A. Kubantsev, I.V. Makhlyueva, A.V. Fedotov, V.G.
Shevchenko, V.I. Shekelian, V.V. Ammosov, V.A. Gapienko, G.S.
Gapienko, A.G. Denisov, V.G. Zaets, V.I. Klyukhin, V.I. Koreshev,
P.V. Pitukhin, V.I. Sirotenko, E.A. Slobodyuk, Z.U. Usubov, J.P.
Berge, D. Bogert, J. Malko, F.A. Nezrick, R. Orava, R. Hanft, J.
Bell, C.T. Coffin, V. Lewis, B.P. Roy, D. Sinclair (Moscow, ITEP &
Serpukhov, IFVE & Fermilab & Michigan U.), ITEP-72-1983-mc (microfiche), 1983.
32pp.
Published in Sov.J.Nucl.Phys.39:396,1984.

<ACCELERATOR> FNAL   <DETECTOR> HBC-15FT

<REACTIONS STUDIED>	ECM(GEV)	PLAB(GEV/C)
NUMUBAR NUCLEON --> MU+ X	3.970 - 7.532	8 - 30
NUMUBAR NUCLEON --> OMU+ X		
NUMUBAR NUCLEON --> OMU+ HADRON+ X		
NUMUBAR NUCLEON --> OMU+ HADRON- X		
NUMUBAR NUCLEON --> NUMUBAR X		
NUMUBAR P --> OMU+ X	3.987 - 7.562	8 - 30
NUMUBAR P --> OMU+ X	3.987 - 7.562	8 - 30
NUMUBAR P --> NUMUBAR X		
NUMU P --> NUMU X	3.987 - 7.562	8 - 30
NUMU NUCLEON --> NUMU X	3.970 - 7.532	8 - 30

<EXPERIMENTAL COMMENTS> WIDE ANUMU BEAM

<DATA COMMENTS> 2039 EVNTS

****

```
                         .
                         .
                         .
->
FIND FSP HIGGS
-Result: 4 PAPERS
->
AND ECM GT 30
-Result: 1 PAPER
->
TYPE
```

SEARCH FOR CHARGED HIGGS AND TECHNIPIONS AT PETRA.
By TASSO Collaboration (M. Althoff, et al.), DESY 82/069, Oct 1982. 21pp.
Published in Phys.Lett.122B:95,1983.

<ACCELERATOR> DESY-PETRA   <DETECTOR> TASSO

<REACTIONS STUDIED>	ECM(GEV)	PLAB(GEV/C)
E+ E- --> 2HIGGS	33 - 37	1066E3 - 1340E3

<PARTICLES STUDIED> HIGGS

****
```
->
```

A PARTICLES Database Example

```
->
SELECT PARTICLES
-Command logging in effect for this subfile
* This PARTICLES subfile contains the Full Listings
* from the Review of Particle Properties, updated as of Apr. 21, 1986.
->
SHOW INDEX
Goal Records:  SECTION
Simple Index:  PART-PROP, PP, PROP, PROPERTY
->
BROWSE PP
A1(1270) REF
DELTA(1232) REF
ETA(1275)
J/PSI MASS
LAMBDA(2100) PW
PI(1770) W
SIGMA(1915) MASS
XI(2500) REF
->
BROWSE PP Z
XIO MASS
XIO MOM
XIO PW
XIC REF
XIO W
Z
Z MASS
Z PW
Z REF
Z W
-More?
NO
->
FIND PP Z MASS
-Result: 1 SECTION
->
TYPE

LISTING FROM REVIEW OF PARTICLE PROPERTIES -- LAST UPDATE:  APR 1986

CODE  EVTS    VALUE    ERROR(+) ERROR(-) REFERENCE   DETEC CHG COMMENTS


                      44   Z MASS (GEV)

M         5   (95.2)    (2.5)            ARNISON    83 UA1  REPL.BY ARNISON2 83
M         5   (95.6)    (3.2)            ARNISON2   83 UA1  P PBAR ECM=546 GEV
M         4   (91.9)    (1.9)            BAGNAIA    83 UA2  P PBAR ECM=546 GEV
M    A       (85.8)    (7.0)    (5.4)    ARNISON2   84 UA1  P PBAR ECM=546 GEV *
M    B    4   (92.7)    (2.2)            BAGNAIA    84 UA2  P PBAR ECM=546 GEV *
M    C   13   92.5      2.0              APPEL      86 UA2  P PBAR ECM=546+630 *
M    D   14   93.0      3.3              ARNISON    86 UA1  P PBAR ECM=546+630 *
M    A   FROM 4 MU+ MU-, 1 MU+ MU- GAMMA.                                     *
M    B   REANALYSIS OF BAGNAIA 83 AFTER RECALIBRATION OF CALORIMETER.         *
M    B   STAT. (1.7) AND SYST. (1.4) ERRORS ADDED IN QUADRATURE.              *
M    C   STAT. (1.3) AND SYST. (1.5) ERRORS ADDED IN QUADRATURE.              *
M    D   STAT. (1.4) AND SYST. (3.0) ERRORS ADDED IN QUADRATURE.              *
M            . .. . . . . . .
M    AVG     92.6      1.7      AVERAGE

------ --------- --------- --------- --------- --------- --------- --------
->
FIND PP J/PSI WIDTH
-Result: 1 SECTION
->
TYPE

LISTING FROM REVIEW OF PARTICLE PROPERTIES -- LAST UPDATE:  APR 1986
```

CODE   EVTS   VALUE   ERROR(+) ERROR(-) REFERENCE   DETEC CHG COMMENTS

                        70   J/PSI(3097) WIDTH (KEV)

W		69.	15.		BOYARSKI	75 SMAG		E+E-
W		68.	26.		BALDINI1	75 FRAG		E+E-
W		60.	25.		ESPOSITO	75 FRAM		E+E-
W	F	58.	13.		BRANDELIK	79 DASP	E+ E-	

W   F FROM A SIMULTANEOUS FIT TO E+ E-,MU+ MU- AND HADRONIC CHANNELS
W   F ASSUMING G(E+ E-) = G(MU+ MU-)
W   . . . .
W   AVG   63.0   8.6   AVERAGE

------ --------- --------- --------- --------- --------- --------- --------
->
FIND PP "ETA/C(2980)"
-Result: 5 SECTIONS
->
TYPE

LISTING FROM REVIEW OF PARTICLE PROPERTIES -- LAST UPDATE: APR 1986

CODE   EVTS   VALUE   ERROR(+) ERROR(-) REFERENCE   DETEC CHG COMMENTS

                   26   ETA/C(2980,JPG=0-+) I=0

                   OBSERVED IN THE INCLUSIVE GAMMA SPECTRUM GENERATED FROM
                     PSI(3685) DECAY, THEREFORE C=+. FROM THE 4PI DECAY G=+,
        THEREFORE I=0. FROM ANGULAR DISTRIBUTION IN J/PSI TO ETA/C, ETA/C TO
        PHI PHI, JP=0- (BALTRUSAITIS 84).

------ --------- --------- --------- --------- --------- --------- --------

                   26   ETA/C(2980) MASS (MEV)

M	M	18 2982.	8.		HIMEL	80 SMK2	E+ E-	
M	M	(2980.)	(9.)		PARTRIDGE	80 CBAL	E+ E-	
M	B	(2976.)	(8.)		BALTRUSAI	84 SMK3	J/PSI, 2 PHI GAM*	
M		75(2977.)	(4.)		BALTRUSAI	85 SMK3	J/PSI,ETA 2PI G *	
M	A	2980.2	1.6		BALTRUSAI	85 SMK3	J/PSI,ETAC GAMMA*	
M		2984.	5.		GAISER	85 CBAL	J/PSI,GAMMA X *	

M   . . . .
M   AVG   2980.6   1.5   AVERAGE

M   M   MASS ADJUSTED BY US TO CORRESPOND TO J/PSI(3097) MASS = 3097.
M   B   ETA/C TO PHI PHI
M   A   AVERAGE OF SEVERAL DECAY MODES.

------ --------- --------- --------- --------- --------- --------- --------

                   26   ETA/C(2980) PARTIAL DECAY MODES

P   HADRONIC DECAYS
P   ---------------
P11   ETA/C(2980) INTO 2(PI+PI-)   140+ 140+ 140+ 14
P12   ETA/C(2980) INTO P PBAR   938+ 938
P13   ETA/C(2980) INTO PI+ PI- P PBAR   140+ 140+ 938+ 93
P14   ETA/C(2980) INTO K KBAR PI   498+ 498+ 140
P15   ETA/C(2980) INTO PI+ PI- K+ K-   140+ 140+ 494+ 49
P16   ETA/C(2980) INTO ETA PI+ PI-   549+ 140+ 140
P17   ETA/C(2980) INTO PHI PHI   1020+1020
P18   ETA/C(2980) INTO K*(892) K*BAR(892)   892+ 892
P19   ETA/C(2980) INTO RHO RHO   769+ 769
P20   ETA/C(2980) INTO OMEGA OMEGA   783+ 783
P21   ETA/C(2980) INTO AO(980) PI   983+ 140
P22   ETA/C(2980) INTO A2(1320) PI   1318+ 140
P23   ETA/C(2980) INTO F2(1270) ETA   1274+ 549
P24   ETA/C(2980) INTO ETA' 2PI   958+ 140+ 140
P25   ETA/C(2980) INTO ETA 2K   549+ 498+ 498
P26_   ETA/C(2980) INTO K*(892) K- PI+ + C.C.   892+ 498+ 140

P   RADIATIVE DECAYS
P   ---------------
P31   ETA/C(2980) INTO GAMMA GAMMA   0+   0

------ --------- --------- --------- --------- --------- --------- --------
                                    .
                                    .
                                    .

A REACTIONS Database Example

```
->
SELECT REACTIONS
-Command logging in effect for this subfile
->
SHOW INDEX
Goal Records:   RECORD
Simple Index:   A, AU, AUTH, AUTHOR, FIRST-AUTH-ONLY, ID, SC
Simple Index:   R, REF, REFERENCE
Simple Index:   D, DATE, Y, YEAR
Simple Index:   RED
Simple Index:   RE, REA, REAC, REACTION
Simple Index:   OBS, OBSERVABLE, YN
Simple Index:   BMOM, PLAB
Simple Index:   FINAL-STATE-PART, FSP
Simple Index:   EXP, EXPERIMENT, EXPT
Simple Index:   DE, DET, DETECTOR
->
BROWSE FSP LAM
K3*(1780)-
K3*(1780)O
K4*(2060)+
K4*(2060)-
K4*(2060)O
LAMBDA
LAMBDA(1405SO1)
LAMBDA(1520DO3)
LAMBDA(1690DO3)
LAMBDA(1830DO5)
-More?
NO
->
FIND RE E+ E-# AND FSP LAMBDA
-Result: 13 RECORDS
->
AND DATE 1986
-Result: 2 RECORDS
->
TYPE
****************************************************************************
AUTHOR = DE LA VAISSIERE 86
REF = PRL 54, 2071          DATE = 1986        (  JOUR )
EXPERIMENT = SLAC-PEP-OO5   DETECTOR = MARK-II

SLAC-PEP. LAMBDA PRODUCTION AT SQRT(S) = 29 GEV BY THE MARK-II COLLABORATIO N.
CORRELATIONS IN RAPIDITY AND ANGLES ARE OBSERVED FOR EVENTS WITH TWO DETECT ED
LAMBDAS.
NUMERICAL VALUES OF DIFFERENTIAL DISTRIBUTIONS SUPPLIED BY V. LUTH.
                                      .
                                      .
                                      .

TABLE
TABLE-KEYS
     RE = E+ E- --> LAMBDA X
     RE = E+ E- --> LAMBDABAR X
     OBS = DSIG/DX
     PLAB = 14.5
     DATA FROM TABLE,FIG,PAGE :F 1

RE                      E+ E- --> (LAMBDA + ALAMBDA) ANYTHING
SQRT(S) IN GEV              29
     X(DEF=2*E(P=3)/SQRT(S))              (S/BETA)*D(SIG)/D(X) IN NB*GEV**2
     0.088                                2318.1      +-       358.6
     0.098                                1211.9      +-       153.2
     0.116                                 636.6      +-        68.6
     0.143                                 395.5      +-        45.5
     0.173                                 219.9      +-        29.0
     0.205                                 235.6      +-        30.8
     0.237                                 142.9      +-        21.2
     0.270                                 117.3      +-        19.0
     0.303                                  79.9      +-        14.9
     0.337                                  58.4      +-        13.3
     0.387                                  37.8      +-         8.1
     0.455                                  20.0      +-         5.8
     0.523                                  10.2      +-         3.4
     0.591                                   3.0      +-         3.3
     0.660                                   1.1      +-         2.7
                                      .
                                      .
                                      .
****************************************************************************
```

```
AUTHOR = BARINGER 86
REF = PRL 56, 1346        DATE = 1986        (  JOUR )
EXPERIMENT = SLAC-PEP-012    DETECTOR = HRS
```

SLAC-PEP. MEASUREMENT OF LAMBDA PRODUCTION AT SQRT(S) = 29 GEV BY THE HRS C
OLLABORATION.
NUMERICAL VALUES SUPPLIED BY P. BARINGER.


```
TABLE
TABLE-KEYS
     RE = E+ E- --> LAMBDA X
     RE = E+ E- --> LAMBDABAR X
     OBS = DSIG/DZ
     PLAB = 14.5
     DATA FROM TABLE,FIG,PAGE :F 2

RE                         E+ E- --> (LAMBDA + ALAMBDA) ANYTHING
SQRT(S) IN GEV             29
     Z(DEF=2*E(P=3)/SQRT(S))            (S/BETA)*D(SIG)/D(Z) IN NB*GEV**2
     0.100      TO        0.125         1053.        +-        95.
                                        (DSYS=269 )
     0.125      TO        0.150         514.0        +-        47.0
                                        (DSYS= 68.6 )
     0.150      TO        0.175         355.2        +-        33.4
                                        (DSYS= 47.0 )
     0.175      TO        0.200         307.4        +-        28.0
                                        (DSYS= 40.3 )
     0.200      TO        0.225         198.7        +-        23.0
                                        (DSYS= 22.2 )
     0.225      TO        0.275         150.3        +-        13.4
                                        (DSYS= 16.6 )
     0.275      TO        0.325         86.0         +-        10.1
                                        (DSYS= 10.7 )
     0.325      TO        0.375         52.5         +-        8.7
                                        (DSYS= 7.9 )
     0.375      TO        0.425         51.2         +-        7.8
                                        (DSYS= 7.9 )
     0.425      TO        0.500         28.8         +-        5.2
                                        (DSYS= 5.7 )
     0.500      TO        0.600         11.1         +-        2.7
                                        (DSYS= 2.6 )
     0.600      TO        0.800         2.00         +-        1.09
                                        (DSYS= 0.47)
                                   .
                                   .
                                   .
->
FIND RE "P P --> P P" AND OBS DSIG/DT
-Result: 40 RECORDS
->
AND PLAB GT 100
-Result: 26 RECORDS
->
SET FORMAT $REPORT AUTH REF EXP DE     <--- Sets up a tabular format for
->                                          author, reference, exp't, detector.
SEQUENCE DATE (D)                      <--- Sequences the 26 records found
-Stack: 26 RECORDS                          above by date (descending order).
->
TYPE
Sept. 9, 1986                                                      Page 1

AUTH                  REF                  EXP                  DE
-------------------   ------------------   ------------------   ------------------
BREAKSTONE 85         PRL 54, 2180         CERN-R-420           SFM
AMOS 85               NP B262, 689         CERN-R-211           CNTR
CARBONI 84            CERN-EP-84-163       CERN-R-210           COMB
BREAKSTONE 83         BRIGHTON             CERN-R-420           SFM
RUBINSTEIN 84         PR D30,1413          FNAL-577             DAS
BREAKSTONE 84         NP B248,253          CERN-R-420           SFM
BURQ 83?              NP B217, 285         CERN-NA-008          DAS
AMOS 83               PL 120B,460          CERN-R-211           CNTR
AMOS 83               PL 128B,343          CERN-R-211           CNTR
AMBROSIO 82?          PL 115B, 495         CERN-R-210           COMB
BRICK 82?             PR D25, 2794         FNAL-570             HBC-30IN-HYB
                                   .
                                   .
                                   .
->
SET FORMAT DEFAULT                     <--- Resets format to default style.
->
```

An EXPERIMENTS Database Example

```
->
SELECT EXPERIMENTS
-Command logging in effect for this subfile
->
SHOW INDEX
Goal Records:   EXPERIMENT
Simple Index:   EXP, EXPERIMENT, EXPERIMENT-NUM, EXPT, R, REPORT-NUM, RN
Simple Index:   T, TI, TITLE
Simple Index:   A, AU, AUTH, AUTHOR
Simple Index:   AF, AFF, AFFIL, AFFILIATION, I, INST, INSTITUTION
Simple Index:   D, DA, DATE, DATE-APPROVED
Simple Index:   DATE-STARTED, DS
Simple Index:   DATE-COMPLETED, DC
Simple Index:   CIT, CITATION, JOUR, PAPER, PUBLISHED-PAPER, PUBN
Simple Index:   AC, ACC, ACCELERATOR
Simple Index:   DE, DET, DETECTOR
Simple Index:   PL, POL, POLARIZATION
Simple Index:   RE, REA, REAC, REACTION
Simple Index:   FINAL-STATE-PART, FSP
Simple Index:   PLAB
Simple Index:   ECM
Simple Index:   P, PART, PARTICLE
->
BROWSE ACC SLAC
LENI
RHEL
SACL
SERP
SIN
SLAC
SLAC-PEP
SLAC-SLC
SLAC-SPEAR
TOKY
-More?
NO
->
BROWSE PARTICLE BOTTOM
A1(1270)0
A2(1320)+
A2(1320)0
B(5270)
BARYONIUM
BOTTOM
B1(1235)-
B1(1235)0
CHARGED+
CHARGED-
-More?
NO
->
FIND ACC SLAC-PEP AND PARTICLE BOTTOM
-Result: 2 EXPERIMENTS
->
TYPE
 SLAC-PEP-020 (Jun 1978) Approved 8 Sep 1978.

 DELCO AT PEP

 CAL TECH -- B. Barish, S.-C. Gao, Y.-Z. Huang, D. Koop, J. Ludwig, G. Mills,
      T. Pal, L. Rivkin, W. Ruckstuhl, M. Sakuda, S. Sherman, E. Siskind, R.
      Stroynowski, H. Yamamoto
 SLAC -- W. Atwood, P. Baillon, A. Courau, H. DeStaebler, R. Dubois, E. Elsen,
      R. Johnson, H. Kichimi, D. Klem, A. Ogawa, D. Perret-Gallix, R. Pitthan,
      C. Prescott, L. Rochester, R. Taylor, S.-Q. Wang, C. Young
 STANFORD U. -- G. Bonneaud, G. Donaldson, M. Duro, G. Irwin, J.
      Kirkby(**Spokesperson), D. Pollard, S. Wojcicki, W.-G. Yan

    <ACCELERATOR> SLAC-PEP    <DETECTOR> DELCO

    <REACTIONS STUDIED>
       E+ E- --> E+ X                  29 GEV (ECM)
       E+ E- --> E- X                      "
       E+ E- --> E+(S) E-(S) X             "
       E+ E- --> HADRONS                   "
       E+ E- --> TAU+ TAU-                 "

    <PARTICLES STUDIED>
       CHARM, BOTTOM, TAU
```

```
<EXPERIMENTAL COMMENTS> Studies emphasize inclusive single and multiple
    electron production, jets using heavy flavor tagging, flavor production in
    quark and gluon jets, heavy particle lifetimes, and 2-gamma interactions.
    For a description of the apparatus, see the LBL-91 supplement on detectors.

<PUBLISHED PAPERS> PRL 52 (1984) 970, PRL 52 (1984) 1944, PRL 53 (1984) 1873,
    and PL B (submitted).

*************************************************************************

SLAC-PEP-005 (30 Dec 1976) Approved 21 Jan 1977.

A GENERAL SURVEY OF PARTICLE PRODUCTION AT PEP

SLAC -- A. Boyarski, M. Breidenbach, D. Burke, J. Dorfan, G. Feldman, M.
    Franklin, L. Gladney, G. Hanson, R. Hollebeek, W. Innes, J. Jaros, A.
    Lankford, R.R. Larsen, B. Leclaire, N. Lockyer(*Spokesperson), V. Luth,
    C. Matteuzzi, R. Ong, M. Perl, B. Richter, M. Ross, D. Schlatter, J.
    Yelton, C. Zaiser
LBL, BERKELEY -- G.S. Abrams, D. Amidei, A. Baden, G. Gidal, M. Gold, G.
    Goldhaber, L. Golding, D. Herrup, I. Juricic, J.A. Kadyk, M. Nelson, P.
    Rowson, H. Schellman, P. Sheldon, G.H. Trilling, C.de la Vaissiere
HARVARD U. -- M. Levi, T. Schaad, R. Schwitters

<ACCELERATOR> SLAC-PEP    <DETECTOR> MARK-II

<REACTIONS STUDIED>
    E+ E-                              8-36 GEV (ECM)

<PARTICLES STUDIED>
    CHARM, BOTTOM, TAU

<EXPERIMENTAL COMMENTS> First experiments will scan the entire PEP energy
    range in small steps, then collect large amounts of data at a few energies.
    Studies jet properties and evolution, charm and bottom lifetimes and
    fragmentation, etc. For a description of the apparatus, see the LBL-91
    supplement on detectors. Running as of February 83.
                            .
                            .
                            .
```

Availability of Databases Elsewhere

Several of the databases described above are accessible (under different systems) on computers in the UK (contact Dr. M. Whalley, Dept. of Physics, Univ. of Durham. South Road, Durham DH1 3LE, England; phone 0385-64971, x591) and in the USSR (contact Dr. V.V. Ezhela, Inst. for High Energy Physics, Serpukhov, Moscow Region, USSR).

Acknowledgments

References

1) Particle Data Group, "A Guide to Data in Elementary Particle Physics," LBL-90 (available fall 1986).

2) C.G. Wohl et al. (Particle Data Group), "Review of Particle Properties," Phys. Lett. **170B** (April 1986).

3) C.G. Wohl et al. (Particle Data Group), "Current Experiments in Elementary Particle Physics," LBL-91 Revised (January 1985).