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COMPILATION OF CURRENT HIGH ENERGY PHYSICS EXPERIMENTS

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LAWRENCE BERKELEY LABORATORY
University of California

Prepared for the Department of Energy under contract W-7405-ENG-48

DISCLAIMER

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Table of Contents

Introduction

This is the fourth edition of our compilation of current high energy physics experiments. It is a collaborative effort of the Berkeley Particle Data Group, the SLAC library, and nine participating laboratories: Argonne (ANL), Brookhaven (BNL), CERN, DESY, Fermilab (FNAL), the Institute for Nuclear Study, Tokyo (INS), KEK, Serpukhov (SERP), and SLAC.

The compilation includes summaries of all high energy physics experiments at the above laboratories that (1) were approved (and not subsequently withdrawn) before about April 1981, and (2) had not completed taking of data by 1 January 1977. We emphasize that only approved experiments are included.

The contents of the compilation are:

Summaries of experiments -- These are on the microfiche in the pocket at the front of the report. An example from the summaries, with some explanatory notes, follows this introduction.

Indices -- These follow the example. One index lists experiments by initial-state particles and beam momentum, in order of increasing particle mass and beam momentum. Another index lists experiments by spokesman.

Vocabularies -- These follow the indices, and give names and abbreviations used in the summaries. There are vocabularies for accelerators, detectors, particles, institutions, etc.

Beam lists -- These list beams for fixed-target experiments at Brookhaven, CERN, Fermilab, KEK, Serpukhov, and SLAC.

Anyone wanting more information about a particular experiment should contact the experiment's spokesman directly, not us. Although the original experimental proposals are sometimes available in libraries, there are often subsequent letters, revisions, and addenda, or simply informal arrangements with the powers that be, that extend the aims or shift the emphasis of an experiment. There are also often changes of collaborators on an experiment. We try to keep up with such changes, but of course cannot entirely succeed. The spokesman is the authoritative source of information about an experiment.

We invite comments pointing out omissions, obscurities, out-of-date information, and outright errors. There are no doubt a number of each. Comments should be sent to:

Particle Data Group
Attn: PROPOSALS
Lawrence Berkeley Laboratory
Berkeley, CA 94720
USA

Requests for copies from the Americas, Australasia, and the Far East should go to the above address, while those from other areas should go to:

CERN Scientific Information Service
CH-1211 Geneva 23
Switzerland

EXAMPLE FROM THE MICROFICHE

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

ANL-E-426 (14 JAN 1977); APPROVED 27 JAN 1977; STARTED AUG 1977; COMPLETED 3 JUL 1978.

PROPOSAL TO MEASURE 90-DEG C.M. PROTON-PROTON ELASTIC SCATTERING IN PURE INITIAL SPIN STATES
  FROM 2 TO 6 GEV/C

MICH -- K.ABE, R.C.FERNOW, A.D.KRISCH(SPOKESPERSON), T.A.MULERA, A.J.SALTHOUSE, B.SANDLER,
        K.M.TERWILLIGER
ANL  -- P.F.SCHULTZ, L.G.RATNER, J.R.O'FALLON
OXF  -- D.G.CRABB
NORD -- H.E.MIETTINEN
ABAD -- A.LIN

    ACCELERATOR=ANL; DETECTOR=DAS

    POLARIZED BEAM AND TARGET
    P P --> 2P                          2-6 GEV (PLAB)                      POL

    <EXPERIMENTAL COMMENT> USES APPARATUS OF ANL-E-421. RAN FOR 110 SHIFTS. MEASURES
      DIFFERENCE BETWEEN CROSS SECTIONS FOR INITIAL SPINS PARALLEL AND ANTI-PARALLEL, THE
      SPINS BEING ORIENTED PERPENDICULAR TO THE SCATTERING PLANE.
    <BIBLIOGRAPHIC COMMENT> SEE PHYS. LETTERS 74B (1978) 273.

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

ANL-E-427 (17 JAN 1977); APPROVED 27 JAN 1977; COMPLETED 30 JUL 1979.

PROPOSAL TO STUDY EXCLUSIVE LAMBDA-PRODUCTION REACTIONS WITH THE ZGS POLARIZED PROTON BEAM

ANL  -- I.AMBATS, D.AYRES(SPOKESPERSON), D.COHEN, R.DIEBOLD, E.MAY, A.SNYDER, C.WARD,
        A.WICKLUND
ELMT,CHIC -- E.SWALLOW

    ACCELERATOR=ANL; DETECTOR=EMS

    POLARIZED BEAM
    P P --> P LAMBDA K+                 6, 12 GEV (PLAB)                    CS,ANGP,ANG,
                                                                            POL,ASYM
    P N --> N LAMBDA K+                 ''                                  ''
    P N --> P LAMBDA K0                 ''                                  ''

    N(UNSPEC)+          EX,MASS,W,QN

    <EXPERIMENTAL COMMENT> RAN FOR 205 SHIFTS. THE LAMBDA K0 P SAMPLE WILL BE MUCH SMALLER
      THAN THE OTHERS AND ONLY AT 12 GEV/C.

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

ANL-E-428 (17 JAN 1977); APPROVED 27 JAN 1977; STARTED JUN 1977; COMPLETED 25 JUL 1977.

STUDY OF MESONS IN OMEGA PI-, OMEGA PI+ PI-, AND (4PI)- CHANNELS

CARL -- K.W.EDWARDS, D.LEGACEY
MCGI -- P.BROCKMAN, J.GANDSMAN, E.OHANESSIAN, P.M.PATEL
OSU  -- N.R.STANTON
TNTO -- J.BEAUFAYS, J.A.DANKOWYCH, A.J.PAWLICKI, J.D.PRENTICE, T.S.YOON(SPOKESPERSON)

    ACCELERATOR=ANL; DETECTOR=SPEC

    PI- P --> P PI+ PI0 2PI-            8.5 GEV (PLAB)
    PI- P --> P OMEGA PI-               ''
    PI- P --> N 2PI+ PI0 2PI-           ''
    PI- P --> N OMEGA PI+ PI-           ''

    B(1235)-            PW
    G(1700)-            PW
    A2(1310)0           PW
    MESON(UNSPEC)0      EX

    <EXPERIMENTAL COMMENT> RAN FOR 97 SHIFTS. RELATED TO ANL-E-420.

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EXPERIMENT NUMBER, DATE OF PROPOSAL (IN PARENTHESES), AND PROGRESS DATES.

INSTITUTIONS (SEE VOCABULARY FOR ABBREVIATIONS) AND AUTHORS, WITH SPOKESPERSON NOTED.

ACCELERATOR AND DETECTOR (SEE VOCABULARIES).

ADDITIONAL INFORMATION.

TITLE AND/OR DESCRIPTION (THE LATTER IN BRACKETS).

POLARIZATION INFORMATION (IF ANY).

REACTIONS TO BE STUDIED (SEE PARTICLE VOCABULARY), BEAM MOMENTUM OR OTHER KINEMATIC VARIABLE(S) (SEE VOCABULARY), AND REACTION-DATA DESCRIPTORS (SEE VOCABULARY).

PARTICLES AND PARTICLE PROPERTIES TO BE STUDIED (SEE VOCABULARIES).

BEAM-TARGET-MOMENTUM INDEX

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
GAMMA P		<1.3	INS-13-2
GAMMA P		<1.3	INS-15-2
GAMMA P		<200.0	CERN-NA-014
GAMMA P	0.6	1.1	INS-15-1
GAMMA P	0.8	1.1	INS-14-1
GAMMA P	0.8	1.1	INS-15-4
GAMMA P	0.9	1.1	INS-14-3
GAMMA P	3.0	7.2	DESY-115
GAMMA P	3.0	7.2	DESY-142
GAMMA P	3.0	7.2	DESY-145
GAMMA P	4.0	7.0	DESY-094
GAMMA P	5.5	6.5	DESY-136
GAMMA P	10.0	30.0	CERN-WA-004
GAMMA P	10.0	70.0	CERN-WA-004
GAMMA P	20.0		SLAC-BC-072
GAMMA P	20.0		SLAC-BC-073
GAMMA P	20.0	60.0	FNAL-152B
GAMMA P	20.0	70.0	CERN-WA-057
GAMMA P	20.0	140.0	FNAL-612
GAMMA P	70.0	140.0	FNAL-516
GAMMA P	>100.0		CERN-NA-024
GAMMA N	0.4	1.1	INS-14-4
GAMMA N	0.7	1.2	INS-12-1
GAMMA N	3.4	5.0	DESY-129
GAMMA NUCLEON	10.0	180.0	CERN-NA-001
GAMMA DEUT	0.3	0.6	INS-16-1
GAMMA DEUT	0.4	0.8	INS-15-3
GAMMA DEUT	0.4	0.6	INS-13-1
GAMMA BE	0.3	1.0	INS-16-3
GAMMA BE	40.0	200.0	FNAL-401
GAMMA NUCLEUS	?		CERN-WA-004
GAMMA NUCLEUS	0.	300.0	FNAL-458
GAMMA NUCLEUS	0.2	1.0	INS-16-2
GAMMA NUCLEUS	0.4	0.6	INS-14-2
GAMMA NUCLEUS	0.4	0.8	INS-15-3
GAMMA NUCLEUS	0.8	1.1	INS-15-4
GAMMA NUCLEUS	10.0	180.0	CERN-NA-001
GAMMA NUCLEUS	20.0	60.0	FNAL-152B
GAMMA NUCLEUS	20.0	80.0	CERN-WA-034
GAMMA NUCLEUS	20.0	80.0	CERN-WA-045
GAMMA NUCLEUS	20.0	80.0	CERN-WA-058
GAMMA NUCLEUS	20.0	200.0	FNAL-087A
GAMMA NUCLEUS	100.0	300.0	FNAL-087A
MOMENTUM RANGES FOR NEUTRINO AND ANTINEUTRINO BEAMS ARE NOT DEFINED VERY SYSTEMATICALLY.			
NUE E-	0.	260.0	CERN-WA-018
NUE E-	0.	400.0	FNAL-310
NUE E-	10.0	100.0	FNAL-253
NUE P	0.	150.0	CERN-WA-024
NUE P	0.	400.0	FNAL-310
NUE P	1.0	8.0	BNL-639
NUE N	0.	400.0	FNAL-310
NUE N	1.0	8.0	BNL-639
NUE NUCLEUS	0.	150.0	CERN-WA-014
NUE NUCLEUS	0.5	3.0	CERN-PS-180
NUE NUCLEUS	10.0	250.0	FNAL-636
ANUE E-	0.	230.0	FNAL-594
ANUE E-	0.	260.0	CERN-WA-018
ANUE E-	10.0	100.0	FNAL-253
ANUE P	0.	400.0	FNAL-310
ANUE P	1.0	8.0	BNL-639
ANUE N	0.	400.0	FNAL-310
ANUE N	1.0	8.0	BNL-639
ANUE AL	2.0	30.0	SERP-E-045
NUMU E-	0.	12.0	BNL-613
NUMU E-	0.	12.0	BNL-734
NUMU E-	0.	150.0	CERN-WA-014
NUMU E-	0.	150.0	CERN-WA-021
NUMU E-	0.	230.0	FNAL-594
NUMU E-	0.	260.0	CERN-WA-018
NUMU E-	0.	400.0	FNAL-310
NUMU E-	2.0	30.0	SERP-E-045
NUMU E-	4.0		BNL-639
NUMU E-	10.0		BNL-639
NUMU E-	10.0	100.0	FNAL-253
NUMU P	0.	4.0	ANL-E-412
NUMU P	0.	10.0	BNL-427
NUMU P	0.	10.0	BNL-737
NUMU P	0.	12.0	BNL-613
NUMU P	0.	12.0	BNL-734
NUMU P	0.	150.0	CERN-WA-021
NUMU P	0.	150.0	CERN-WA-024
NUMU P	0.	200.0	FNAL-053A
NUMU P	0.	200.0	FNAL-545
NUMU P	0.	260.0	CERN-WA-001
NUMU P	0.	260.0	CERN-WA-025
NUMU P	0.	400.0	FNAL-310
NUMU P	1.0	8.0	BNL-639
NUMU P	2.0	3.5	BNL-693

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
NUMU P	3.0	5.0	BNL-693
NUMU P	4.0		BNL-639
NUMU P	10.0		BNL-639
NUMU P	28.0	43.0	FNAL-388
NUMU P	35.0	64.0	FNAL-388
NUMU P	50.0	150.0	FNAL-380
NUMU P	91.0	95.0	FNAL-388
NUMU P	131.0	143.0	FNAL-388
NUMU N	0.	0.2	BNL-704
NUMU N	0.	0.4	BNL-706
NUMU N	0.	4.0	ANL-E-412
NUMU N	0.	10.0	BNL-427
NUMU N	0.	10.0	BNL-737
NUMU N	0.	12.0	BNL-734
NUMU N	0.	200.0	FNAL-545
NUMU N	0.	230.0	FNAL-594
NUMU N	0.	260.0	CERN-WA-025
NUMU N	0.	400.0	FNAL-310
NUMU N	1.0	8.0	BNL-639
NUMU N	2.0	3.5	BNL-693
NUMU N	2.0	30.0	SERP-E-045
NUMU N	3.0	5.0	BNL-693
NUMU N	4.0		BNL-639
NUMU N	10.0		BNL-639
NUMU NUCLEON	0.	200.0	FNAL-545
NUMU DEUT	0.	10.0	BNL-427
NUMU DEUT	0.	10.0	BNL-737
NUMU DEUT	0.	260.0	CERN-WA-001
NUMU DEUT	0.	260.0	CERN-WA-025
NUMU C12	0.	0.2	BNL-704
NUMU NE	0.	200.0	FNAL-053A
NUMU NE	28.0	43.0	FNAL-388
NUMU NE	35.0	64.0	FNAL-388
NUMU NE	50.0	150.0	FNAL-380
NUMU NE	91.0	95.0	FNAL-388
NUMU NE	131.0	143.0	FNAL-388
NUMU AL	2.0	30.0	SERP-E-045
NUMU FE	0.	260.0	CERN-WA-001
NUMU FE		<1000.0	FNAL-634
NUMU FE	2.0	30.0	SERP-E-045
NUMU PB	0.	200.0	CERN-WA-044
NUMU PB	0.	400.0	FNAL-310
NUMU NUCLEUS	?		FNAL-546
NUMU NUCLEUS	0.	6.0	CERN-PS-167
NUMU NUCLEUS	0.	6.0	CERN-PS-168
NUMU NUCLEUS	0.	150.0	CERN-WA-014
NUMU NUCLEUS	0.	150.0	CERN-WA-017
NUMU NUCLEUS	0.	200.0	FNAL-536
NUMU NUCLEUS	0.	200.0	FNAL-545
NUMU NUCLEUS	0.	230.0	FNAL-594
NUMU NUCLEUS	0.	240.0	CERN-WA-016
NUMU NUCLEUS	0.	260.0	CERN-WA-018
NUMU NUCLEUS	0.5	1.5	CERN-PS-181
NUMU NUCLEUS	0.5	3.0	CERN-PS-180
NUMU NUCLEUS	5.0	20.0	SERP-E-111
NUMU NUCLEUS	10.0	20.0	SERP-E-107
NUMU NUCLEUS	10.0	100.0	CERN-WA-059
NUMU NUCLEUS	10.0	100.0	FNAL-531
NUMU NUCLEUS	10.0	100.0	FNAL-564
NUMU NUCLEUS	10.0	200.0	CERN-WA-047
NUMU NUCLEUS	10.0	250.0	FNAL-636
NUMU NUCLEUS	20.0	600.0	FNAL-652
NUMU NUCLEUS	25.0		CERN-WA-022
NUMU NUCLEUS	25.0	250.0	FNAL-616
NUMU NUCLEUS	>60.0		FNAL-553
NUMU NUCLEUS	65.0		CERN-WA-022
NUMU NUCLEUS	>100.0		FNAL-482
NUMU NUCLEUS	200.0		CERN-WA-022
NUMU NUCLEUS	275.0		CERN-WA-019
NUMU	?		FNAL-356
NUMU	0.5	3.0	CERN-PS-169
ANUMU E-	0.	12.0	BNL-734
ANUMU E-	0.	200.0	FNAL-180
ANUMU E-	0.	230.0	FNAL-594
ANUMU E-	0.	260.0	CERN-WA-018
ANUMU E-	0.	400.0	FNAL-310
ANUMU E-	4.0		BNL-639
ANUMU E-	10.0		BNL-639
ANUMU E-	10.0	100.0	FNAL-253
ANUMU P	0.	12.0	BNL-734
ANUMU P	0.	100.0	FNAL-031A
ANUMU P	0.	150.0	CERN-WA-021
ANUMU P	0.	150.0	CERN-WA-024
ANUMU P	0.	200.0	FNAL-180
ANUMU P	0.	230.0	FNAL-594
ANUMU P	0.	260.0	CERN-WA-001
ANUMU P	0.	260.0	CERN-WA-025
ANUMU P	0.	400.0	FNAL-310
ANUMU P	1.0	8.0	BNL-639
ANUMU P	2.0	30.0	SERP-E-045
ANUMU P	4.0		BNL-639

BEAM-TARGET-MOMENTUM INDEX

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
ANUMU P	10.0		BNL-639
ANUMU P	28.0	43.0	FNAL-388
ANUMU P	35.0	64.0	FNAL-388
ANUMU P	50.0	150.0	FNAL-380
ANUMU P	91.0	95.0	FNAL-388
ANUMU P	131.0	143.0	FNAL-388
ANUMU N	0.	12.0	BNL-734
ANUMU N	0.	200.0	FNAL-180
ANUMU N	0.	260.0	CERN-WA-025
ANUMU N	0.	400.0	FNAL-310
ANUMU N	1.0	8.0	BNL-639
ANUMU N	4.0		BNL-639
ANUMU N	10.0		BNL-639
ANUMU DEUT	0.	100.0	FNAL-390
ANUMU DEUT	0.	260.0	CERN-WA-001
ANUMU DEUT	0.	260.0	CERN-WA-025
ANUMU NE	0.	200.0	FNAL-180
ANUMU NE	28.0	43.0	FNAL-388
ANUMU NE	35.0	64.0	FNAL-388
ANUMU NE	50.0	150.0	FNAL-380
ANUMU NE	91.0	95.0	FNAL-388
ANUMU NE	131.0	143.0	FNAL-388
ANUMU AL	2.0	30.0	SERP-E-045
ANUMU FE	0.	260.0	CERN-WA-001
ANUMU FE	0.	260.0	CERN-WA-018
ANUMU FE		<1000.0	FNAL-634
ANUMU FE	2.0	30.0	SERP-E-045
ANUMU NUCLEUS	?		FNAL-546
ANUMU NUCLEUS	0.	6.0	CERN-PS-167
ANUMU NUCLEUS	0.	6.0	CERN-PS-168
ANUMU NUCLEUS	0.	200.0	FNAL-536
ANUMU NUCLEUS	0.	230.0	FNAL-594
ANUMU NUCLEUS	0.	260.0	CERN-WA-018
ANUMU NUCLEUS	5.0	20.0	SERP-E-111
ANUMU NUCLEUS	10.0	20.0	SERP-E-107
ANUMU NUCLEUS	10.0	100.0	CERN-WA-059
ANUMU NUCLEUS	10.0	100.0	FNAL-531
ANUMU NUCLEUS	10.0	100.0	FNAL-564
ANUMU NUCLEUS	10.0	200.0	CERN-WA-047
ANUMU NUCLEUS	20.0	600.0	FNAL-652
ANUMU NUCLEUS	25.0	250.0	FNAL-616
ANUMU NUCLEUS	>60.0		FNAL-553
ANUMU NUCLEUS	>100.0		FNAL-482
ANUMU NUCLEUS	200.0		CERN-WA-019
ANUMU	?		FNAL-356
NUTAU NUCLEUS	10.0	250.0	FNAL-636
E- P	?		SLAC-E-122
E- P	?		SLAC-E-133
E- P	2.5		DESY-137
E- P	2.6	3.5	DESY-126
E- P	2.9	6.7	DESY-114
E- P	3.0		DESY-141
E- P	3.7		DESY-137
E- P	4.7		DESY-137
E- P	5.0		DESY-141
E- P	6.0		DESY-125
E- P	6.0		DESY-141
E- P	6.4		DESY-137
E- P	6.4		SLAC-E-130
E- P	6.7	7.0	DESY-137
E- P	7.0		DESY-141
E- P	16.2		SLAC-E-130
E- P	22.6		SLAC-E-130
E- N	?		SLAC-E-133
E- DEUT	?		SLAC-E-133
E- DEUT	3.0		DESY-141
E- DEUT	5.0		DESY-141
E- DEUT	6.0		DESY-141
E- DEUT	6.4		SLAC-E-130
E- DEUT	7.0		DESY-141
E- DEUT	16.2		SLAC-E-130
E- DEUT	22.6		SLAC-E-130
E- HE3	2.0	17.0	SLAC-E-121
E- HE	2.0	17.0	SLAC-E-121
E- BE	3.0		DESY-141
E- BE	5.0		DESY-141
E- BE	6.0		DESY-141
E- BE	7.0		DESY-141
E- SI	3.0		DESY-141
E- SI	5.0		DESY-141
E- SI	6.0		DESY-141
E- SI	7.0		DESY-141
E- NUCLEUS	23.0		SLAC-E-137
E-	5.0	20.0	CERN-WA-064

FOR E^+E^- COLLIDING BEAM EXPERIMENTS, WE GIVE THE CENTER-OF-MASS (= LAB) MOMENTUM RATHER THAN THE EQUIVALENT LAB MOMENTUM FOR SCATTERING ON A STATIONARY TARGET.

E+ E-	?		SLAC-SP-025
E+ E-	?		SLAC-SP-026
E+ E-	?		SLAC-SP-031
E+ E-	1.1	1.3	DESY-119
E+ E-	1.5	3.0	SLAC-SP-028
E+ E-	1.5	4.0	SLAC-SP-029
E+ E-	1.5	4.2	SLAC-SP-024
E+ E-	1.5	4.2	SLAC-SP-030
E+ E-	1.5	4.3	DESY-144
E+ E-	1.6		DESY-119
E+ E-	>1.6		DESY-138
E+ E-	1.8	2.5	DESY-143
E+ E-	1.8		DESY-143
E+ E-	1.9	2.5	DESY-139
E+ E-	1.9	2.3	DESY-140
E+ E-	3.7	5.8	DESY-LENA
E+ E-	4.0	5.0	DESY-146
E+ E-	4.0	18.0	SLAC-PEP-002
E+ E-	4.0	18.0	SLAC-PEP-004
E+ E-	4.0	18.0	SLAC-PEP-005
E+ E-	4.0	18.0	SLAC-PEP-006
E+ E-	4.0	18.0	SLAC-PEP-009
E+ E-	4.0	18.0	SLAC-PEP-012
E+ E-	4.0	18.0	SLAC-PEP-014
E+ E-	4.0	18.0	SLAC-PEP-018
E+ E-	4.0	18.0	SLAC-PEP-020
E+ E-	4.5	5.8	DESY-ARGUS
E+ E-	4.7	5.1	DESY-147
E+ E-	5.0	20.0	DESY-PETRA-CELLO
E+ E-	5.0	20.0	DESY-PETRA-JADE
E+ E-	5.0	20.0	DESY-PETRA-MARKJ
E+ E-	5.0	20.0	DESY-PETRA-PLUTO
E+ E-	5.0	20.0	DESY-PETRA-PLU-2
E+ E-	5.0	20.0	DESY-PETRA-TASSO
E+	5.0	20.0	CERN-WA-064
MU- P	100.0	250.0	CERN-NA-002
MU- P	100.0	250.0	CERN-NA-009
MU- HE	0.		BNL-745
MU- BE	150.0		FNAL-448
MU- CU	150.0		FNAL-448
MU- PB	150.0		FNAL-448
MU- NUCLEUS	100.0	250.0	CERN-NA-004
MU+ AL	0.1		BNL-754
MU+ FE	?		FNAL-203A
MU+ FE	225.0		FNAL-391
PION E-	300.0		CERN-NA-007
PION NUCLEUS	?		CERN-NA-019
PI+ PI-	5.7E-02	8.2	ANL-E-400
PI+ PI-	10.0		SLAC-E-128
PI+ P	?		FNAL-236A
PI+ P	1.5	2.6	CERN-PS-160
PI+ P	1.5	2.6	RHEL-193
PI+ P	>4.0		BNL-596
PI+ P	5.0	20.0	SERP-E-102
PI+ P	6.7		SLAC-BC-060
PI+ P	8.0		ANL-E-400
PI+ P	8.0		ANL-E-436
PI+ P	10.0		BNL-716
PI+ P	10.0		SLAC-E-128
PI+ P	10.0	15.0	BNL-726
PI+ P	10.0	100.0	FNAL-290
PI+ P	12.0		SLAC-BC-059
PI+ P	13.0		SLAC-BC-061
PI+ P	16.0		SLAC-BC-067
PI+ P	16.0		SLAC-E-131
PI+ P	17.0		SLAC-E-123A
PI+ P	17.0		SLAC-E-123B
PI+ P	20.0		CERN-WA-010
PI+ P	20.0		CERN-WA-056
PI+ P	20.0	120.0	FNAL-099
PI+ P	20.0	500.0	FNAL-104
PI+ P	25.0	200.0	FNAL-396
PI+ P	30.0		CERN-WA-003
PI+ P	40.0		CERN-WA-010
PI+ P	40.0		FNAL-324
PI+ P	50.0		FNAL-061
PI+ P	50.0		FNAL-110A
PI+ P	50.0		FNAL-118A
PI+ P	50.0	200.0	CERN-WA-006
PI+ P	55.0		CERN-WA-003
PI+ P	80.0		CERN-WA-003
PI+ P	80.0		CERN-WA-009
PI+ P	80.0		CERN-WA-010
PI+ P	80.0		FNAL-324
PI+ P	100.0		FNAL-061
PI+ P	100.0		FNAL-110A
PI+ P	100.0		FNAL-118A
PI+ P	100.0		FNAL-350
PI+ P	100.0		FNAL-597
PI+ P	100.0	250.0	CERN-NA-024
PI+ P	100.0	300.0	CERN-NA-008
PI+ P	100.0	350.0	FNAL-258

BEAM-TARGET-MOMENTUM INDEX

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
PI+ P	150.0		FNAL-061
PI+ P	150.0		FNAL-118A
PI+ P	160.0		FNAL-324
PI+ P	200.0		FNAL-110A
PI+ P	200.0		FNAL-369
PI+ P	200.0		FNAL-395
PI+ P	200.0		FNAL-557
PI+ P	200.0		FNAL-570
PI+ P	200.0		FNAL-577
PI+ P	200.0	400.0	CERN-NA-005
PI+ P	250.0		CERN-NA-022
PI+ P	300.0		FNAL-395
PI+ P	300.0		FNAL-557
PI+ P	400.0		FNAL-557
PI+ P	400.0		FNAL-609
PI+ N	5.0	20.0	SERP-E-102
PI+ N	10.0		SLAC-E-128
PI+ N	20.0		CERN-WA-056
PI+ NUCLEON	10.0		SLAC-E-128
PI+ DEUT	1.5		KEK-081
PI+ DEUT	5.0	20.0	SERP-E-091
PI+ DEUT	10.0		SLAC-E-128
PI+ DEUT	20.0	500.0	FNAL-104
PI+ DEUT	25.0	200.0	FNAL-396
PI+ DEUT	50.0		FNAL-118A
PI+ DEUT	100.0		FNAL-118A
PI+ DEUT	150.0		FNAL-118A
PI+ C	0.2		FNAL-444
PI+ C	200.0		CERN-NA-003
PI+ NE	25.0		CERN-WA-051
PI+ NE	60.0		CERN-WA-051
PI+ MG	100.0		FNAL-597
PI+ TA	5.0		KEK-053
PI+ AU	100.0		FNAL-597
PI+ NUCLEUS	?		BNL-694
PI+ NUCLEUS	?		FNAL-379
PI+ NUCLEUS	1.0		BNL-758
PI+ NUCLEUS	20.0	150.0	CERN-WA-035
PI+ NUCLEUS	40.0		CERN-WA-039
PI+ NUCLEUS	75.0		FNAL-615
PI+ NUCLEUS	100.0		FNAL-451
PI+ NUCLEUS	100.0	300.0	CERN-NA-010
PI+ NUCLEUS	100.0	350.0	FNAL-258
PI+ NUCLEUS	200.0		FNAL-565
PI+ NUCLEUS	200.0		FNAL-629
PI+ NUCLEUS	250.0		CERN-NA-022
PI+ NUCLEUS	250.0		FNAL-615
PI+	2.0	20.0	CERN-PS-164
PI0	?		SERP-E-119
PI0	?		SERP-E-140
PI- P	?		FNAL-236A
PI- P	?		SERP-E-134
PI- P	?		SERP-E-140
PI- P		<8.0	KEK-064
PI- P	1.0	2.1	RHEL-166
PI- P	1.1		SERP-E-092
PI- P	1.8	3.0	KEK-019
PI- P	2.0	4.0	KEK-021
PI- P	3.5		KEK-063
PI- P	4.0		KEK-063
PI- P	>4.0		BNL-596
PI- P	5.0	15.0	CERN-PS-153
PI- P	5.0	15.0	CERN-PS-157
PI- P	5.0	20.0	SERP-E-091
PI- P	6.0		KEK-006
PI- P	6.0		KEK-012
PI- P	8.0		BNL-715
PI- P	8.0		BNL-771
PI- P	8.0	18.0	BNL-755
PI- P	8.5		ANL-E-420
PI- P	8.5		ANL-E-428
PI- P	10.0		SLAC-E-127
PI- P	10.0	15.0	BNL-726
PI- P	10.0	100.0	FNAL-290
PI- P	12.0		SLAC-E-123A
PI- P	12.0		SLAC-E-123B
PI- P	13.0		BNL-732
PI- P	13.0		SERP-E-116
PI- P	15.0	40.0	SERP-E-074
PI- P	16.0		CERN-WA-040
PI- P	16.0		SLAC-E-127
PI- P	17.0		SLAC-E-123A
PI- P	17.0		SLAC-E-123B
PI- P	20.0		BNL-686
PI- P	20.0		BNL-688
PI- P	20.0		BNL-705
PI- P	20.0		CERN-WA-007
PI- P	20.0		CERN-WA-010
PI- P	20.0	25.0	BNL-679
PI- P	20.0	40.0	SERP-E-105
PI- P	20.0	500.0	FNAL-104

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
PI- P	21.0		BNL-769
PI- P	22.0		BNL-747
PI- P	24.0		BNL-682
PI- P	25.0		SERP-E-116
PI- P	25.0	40.0	SERP-E-094
PI- P	25.0	200.0	FNAL-396
PI- P	30.0		CERN-WA-003
PI- P	30.0	140.0	CERN-WA-009
PI- P	33.0		SERP-E-142
PI- P	40.0		CERN-WA-007
PI- P	40.0		CERN-WA-010
PI- P	40.0		FNAL-324
PI- P	40.0		SERP-E-112
PI- P	40.0		SERP-E-116
PI- P	40.0	55.0	SERP-E-135
PI- P	50.0		FNAL-061
PI- P	50.0		FNAL-110A
PI- P	50.0	200.0	CERN-WA-006
PI- P	55.0		CERN-WA-003
PI- P	60.0		CERN-WA-007
PI- P	70.0		CERN-WA-030
PI- P	80.0		CERN-WA-003
PI- P	80.0		CERN-WA-007
PI- P	80.0		CERN-WA-010
PI- P	80.0		FNAL-324
PI- P	85.0		CERN-WA-067
PI- P	100.0		FNAL-061
PI- P	100.0		FNAL-110A
PI- P	100.0		FNAL-350
PI- P	100.0		FNAL-597
PI- P	100.0	200.0	CERN-NA-011
PI- P	100.0	250.0	CERN-NA-024
PI- P	100.0	350.0	FNAL-258
PI- P	140.0		CERN-WA-011
PI- P	150.0		FNAL-061
PI- P	150.0	345.0	CERN-NA-008
PI- P	160.0		FNAL-324
PI- P	175.0		FNAL-663
PI- P	200.0		FNAL-110A
PI- P	200.0		FNAL-350
PI- P	200.0		FNAL-369
PI- P	200.0		FNAL-557
PI- P	200.0		FNAL-570
PI- P	200.0		FNAL-577
PI- P	200.0	400.0	CERN-NA-005
PI- P	225.0		FNAL-580
PI- P	300.0		CERN-NA-012
PI- P	300.0		FNAL-557
PI- P	350.0		CERN-NA-013
PI- P	360.0		FNAL-384
PI- P	360.0		FNAL-597
PI- P	370.0		CERN-NA-016
PI- P	400.0		FNAL-557
PI- NUCLEON	27.0		SERP-E-109
PI- NUCLEON	40.0		SERP-E-109
PI- DEUT		<4.3	KEK-083
PI- DEUT	5.0	20.0	SERP-E-091
PI- DEUT	20.0	500.0	FNAL-104
PI- DEUT	25.0	200.0	FNAL-396
PI- BE	55.0	57.0	SERP-E-117
PI- BE	200.0		FNAL-326
PI- BE	200.0		FNAL-567
PI- BE	225.0		FNAL-610
PI- BE	275.0		FNAL-650
PI- C	0.2		FNAL-444
PI- C	16.0		BNL-687
PI- C	24.0		BNL-687
PI- C	25.0		BNL-647
PI- C	40.0		SERP-E-080
PI- C	200.0		CERN-NA-003
PI- C12	25.0		SERP-E-080
PI- C12	40.0		SERP-E-080
PI- NE	25.0		CERN-WA-051
PI- NE	60.0		CERN-WA-051
PI- MG	100.0		FNAL-597
PI- MG	360.0		FNAL-597
PI- AL	40.0		SERP-E-080
PI- CR	300.0		FNAL-525
PI- CU	16.0		BNL-687
PI- CU	24.0		BNL-687
PI- CU	25.0	80.0	CERN-WA-012
PI- CU	27.0		SERP-E-108
PI- CU	40.0		SERP-E-080
PI- CU	40.0		SERP-E-108
PI- AG	300.0		FNAL-525
PI- TA	5.0		KEK-053
PI- WT	16.0		BNL-687
PI- WT	24.0		BNL-687
PI- WT	300.0		FNAL-525
PI- AU	100.0		FNAL-597
PI- AU	360.0		FNAL-597

BEAM-TARGET-MOMENTUM INDEX

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
PI- PB	40.0		SERP-E-080
PI- NUCLEUS	?		BNL-694
PI- NUCLEUS	?		FNAL-379
PI- NUCLEUS		<4.3	KEK-082
PI- NUCLEUS	1.0		SERP-E-127
PI- NUCLEUS	20.0	150.0	CERN-WA-035
PI- NUCLEUS	25.0		SERP-E-080
PI- NUCLEUS	40.0		CERN-WA-039
PI- NUCLEUS	40.0		SERP-E-080
PI- NUCLEUS	40.0		SERP-E-143
PI- NUCLEUS	40.0	55.0	SERP-E-135
PI- NUCLEUS	75.0		FNAL-615
PI- NUCLEUS	100.0	300.0	CERN-NA-010
PI- NUCLEUS	100.0	350.0	FNAL-258
PI- NUCLEUS	150.0		FNAL-272
PI- NUCLEUS	200.0		CERN-NA-017
PI- NUCLEUS	200.0		FNAL-490
PI- NUCLEUS	200.0		FNAL-503
PI- NUCLEUS	200.0		FNAL-515
PI- NUCLEUS	200.0		FNAL-565
PI- NUCLEUS	250.0		FNAL-615
PI- NUCLEUS	250.0		FNAL-623
PI- NUCLEUS	300.0		FNAL-272
PI- NUCLEUS	300.0		FNAL-481
PI- NUCLEUS	300.0		FNAL-506
PI- NUCLEUS	300.0		FNAL-568
PI- NUCLEUS	300.0		FNAL-573
PI- NUCLEUS	300.0		FNAL-574
PI- NUCLEUS	300.0		FNAL-595
PI- NUCLEUS	>300.0		CERN-NA-015
PI- NUCLEUS	340.0		CERN-WA-061
PI- NUCLEUS	500.0		CERN-NA-017
PI-	?		SERP-E-115
PI-	2.0	20.0	CERN-PS-164
OMEGA	?		SERP-E-140
PHI	?		SERP-E-140
K+ P	?		FNAL-236A
K+ P	0.5	1.1	BNL-691
K+ P	4.0	6.0	BNL-596
K+ P	11.0		SLAC-E-135
K+ P	12.0		CERN-WA-055
K+ P	16.0		CERN-WA-048
K+ P	20.0		CERN-WA-010
K+ P	20.0	500.0	FNAL-104
K+ P	25.0	200.0	FNAL-396
K+ P	32.1		SERP-E-133
K+ P	40.0		CERN-WA-010
K+ P	40.0		FNAL-324
K+ P	50.0		FNAL-110A
K+ P	50.0		FNAL-118A
K+ P	50.0	200.0	CERN-WA-006
K+ P	70.0		CERN-WA-027
K+ P	80.0		CERN-WA-009
K+ P	80.0		CERN-WA-010
K+ P	80.0		FNAL-324
K+ P	100.0		FNAL-110A
K+ P	100.0		FNAL-118A
K+ P	100.0		FNAL-350
K+ P	100.0		FNAL-597
K+ P	150.0		FNAL-118A
K+ P	160.0		FNAL-324
K+ P	200.0		FNAL-110A
K+ P	200.0		FNAL-557
K+ P	200.0		FNAL-570
K+ P	200.0		FNAL-577
K+ P	200.0	400.0	CERN-NA-005
K+ P	250.0		CERN-NA-022
K+ P	300.0		FNAL-557
K+ P	400.0		FNAL-557
K+ N	0.7	0.9	BNL-641
K+ N	0.7	1.4	RHEL-136
K+ N	1.3		KEK-034
K+ N	1.6		KEK-034
K+ N	1.9		KEK-034
K+ N	5.0	20.0	SERP-E-091
K+ N	5.0	20.0	SERP-E-102
K+ N	6.0		CERN-PS-137
K+ N	75.0		FNAL-585
K+ N	100.0		FNAL-585
K+ N	150.0		FNAL-585
K+ DEUT	1.5		KEK-081
K+ DEUT	5.0	20.0	SERP-E-091
K+ DEUT	20.0	500.0	FNAL-104
K+ DEUT	25.0	200.0	FNAL-396
K+ DEUT	50.0		FNAL-118A
K+ DEUT	100.0		FNAL-118A
K+ DEUT	150.0		FNAL-118A
K+ MG	100.0		FNAL-597
K+ AU	100.0		FNAL-597
K+ NUCLEUS	?		BNL-694
K+ NUCLEUS	?		FNAL-379

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
K+ NUCLEUS	0.5	1.0	KEK-052
K+ NUCLEUS	20.0	150.0	CERN-WA-035
K+ NUCLEUS	40.0		CERN-WA-039
K+ NUCLEUS	70.0		CERN-WA-061
K+ NUCLEUS	100.0		FNAL-451
K+ NUCLEUS	250.0		CERN-NA-022
K+		<0.5	KEK-089
K+	0.5	0.7	KEK-010
K+	2.0	20.0	CERN-PS-164
K+	4.0		BNL-735
K0	?		BNL-749
KL E-	?		FNAL-226
KL AL	30.0	150.0	FNAL-486
KL CU	30.0	150.0	FNAL-486
KL SN	30.0	150.0	FNAL-486
KL PB	30.0	150.0	FNAL-486
KL NUCLEUS	?		FNAL-226
KL	0.	3.0	BNL-696
KL	1.0	4.0	RHEL-168
KL	30.0	200.0	FNAL-617
KL	50.0	150.0	FNAL-533
K- E-	250.0		FNAL-456
K- P	?		FNAL-236A
K- P	0.		BNL-643
K- P	0.		CERN-PS-165
K- P	0.		RHEL-181
K- P	0.4		ANL-E-347
K- P	0.5	1.1	BNL-691
K- P	0.7		BNL-702
K- P	0.7	1.4	RHEL-136
K- P	0.7		BNL-759
K- P	1.2	1.9	RHEL-120
K- P	1.3		KEK-034
K- P	1.6		KEK-034
K- P	1.9		KEK-034
K- P	2.2		BNL-698
K- P	3.0		BNL-593
K- P	4.0		BNL-673
K- P	4.0	6.0	BNL-596
K- P	4.6		BNL-593
K- P	5.0		BNL-673
K- P	5.0	20.0	SERP-E-091
K- P	6.0		BNL-771
K- P	6.7		SLAC-BC-060
K- P	7.0	9.0	SLAC-BC-061
K- P	10.0		SLAC-E-127
K- P	11.0		SLAC-E-132
K- P	11.0		SLAC-E-135
K- P	12.0		CERN-WA-049
K- P	12.0		SLAC-BC-059
K- P	13.0		SERP-E-116
K- P	16.0		CERN-WA-049
K- P	18.5		CERN-WA-060
K- P	20.0		CERN-WA-007
K- P	20.0		CERN-WA-010
K- P	20.0	150.0	FNAL-383
K- P	20.0	500.0	FNAL-104
K- P	22.0		BNL-747
K- P	25.0		SERP-E-116
K- P	25.0	200.0	FNAL-396
K- P	30.0		CERN-WA-003
K- P	30.0	140.0	CERN-WA-009
K- P	33.0		SERP-E-142
K- P	40.0		CERN-WA-007
K- P	40.0		CERN-WA-010
K- P	40.0		FNAL-324
K- P	40.0		SERP-E-112
K- P	40.0		SERP-E-116
K- P	40.0	55.0	SERP-E-135
K- P	50.0		FNAL-110A
K- P	50.0	200.0	CERN-WA-006
K- P	55.0		CERN-WA-003
K- P	60.0		CERN-WA-007
K- P	70.0		CERN-WA-026
K- P	75.0		FNAL-585
K- P	80.0		CERN-WA-003
K- P	80.0		CERN-WA-007
K- P	80.0		CERN-WA-010
K- P	80.0		FNAL-324
K- P	100.0		FNAL-110A
K- P	100.0		FNAL-350
K- P	100.0		FNAL-585
K- P	110.0		CERN-WA-028
K- P	150.0		FNAL-585
K- P	160.0		FNAL-324
K- P	175.0		FNAL-663
K- P	200.0		FNAL-110A
K- P	200.0		FNAL-557
K- P	200.0		FNAL-577
K- P	200.0	400.0	CERN-NA-005
K- P	300.0		FNAL-557

BEAM-TARGET-MOMENTUM INDEX

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
K- P	400.0		FNAL-557
K- DEUT	?		BNL-728
K- DEUT	0.		BNL-643
K- DEUT	1.4		CERN-PS-159
K- DEUT	5.0	20.0	SERP-E-091
K- DEUT	20.0	500.0	FNAL-104
K- DEUT	25.0	200.0	FNAL-396
K- HE	0.		BNL-643
K- C	0.2		FNAL-444
K- C	0.8		BNL-692
K- C	0.8		BNL-759
K- O	0.7		BNL-752
K- CA	0.8		BNL-692
K- IR	6.0		BNL-751
K- NUCLEUS	?		BNL-694
K- NUCLEUS	?		FNAL-379
K- NUCLEUS	0.		CERN-PS-152
K- NUCLEUS	0.		RHEL-113
K- NUCLEUS	0.5		CERN-PS-166
K- NUCLEUS	0.5	1.0	KEK-052
K- NUCLEUS	0.6		BNL-646
K- NUCLEUS	0.7		CERN-PS-154
K- NUCLEUS	0.8		BNL-646
K- NUCLEUS	0.8		BNL-746
K- NUCLEUS	0.8		BNL-760
K- NUCLEUS	1.0		SERP-E-127
K- NUCLEUS	20.0	150.0	CERN-WA-035
K- NUCLEUS	25.0		SERP-E-080
K- NUCLEUS	40.0		CERN-WA-039
K- NUCLEUS	40.0		SERP-E-080
K- NUCLEUS	40.0	55.0	SERP-E-135
K- NUCLEUS	70.0		CERN-WA-061
K- NUCLEUS	150.0		FNAL-272
K- NUCLEUS	300.0		FNAL-272
K-	?		SERP-E-115
K-	2.0	20.0	CERN-PS-164
KAON E-	300.0		CERN-NA-007

PROTON-PROTON COLLIDING BEAM EXPERIMENTS AT THE CERN-ISR ARE ORDERED BY THE EQUIVALENT LAB MOMENTUM FOR SCATTERING ON A STATIONARY TARGET RATHER THAN BY THE ACTUAL LAB (= CENTER-OF-MASS) MOMENTUM.

P P	?		FNAL-236A
P P	0.8	2.0	KEK-057
P P	0.9	2.5	ANL-E-450
P P	1.0		ANL-E-434
P P	1.0		ANL-E-433
P P	1.1		ANL-E-434
P P	1.1		ANL-E-433
P P	1.2		ANL-E-434
P P	1.3		ANL-E-434
P P	1.3		ANL-E-433
P P	1.5		ANL-E-434
P P	1.5	2.0	ANL-E-462
P P	1.6		ANL-E-434
P P	1.7		ANL-E-434
P P	1.7		ANL-E-433
P P	1.7		ANL-E-437
P P	2.0		ANL-E-425
P P	2.0	6.0	ANL-E-426
P P	2.3		ANL-E-433
P P	2.7		ANL-E-447
P P	2.9		ANL-E-447
P P	3.0		ANL-E-425
P P	3.2		ANL-E-447
P P	3.5		ANL-E-447
P P	3.7		ANL-E-447
P P	4.0		ANL-E-415
P P	4.0		ANL-E-447
P P	5.0		ANL-E-447
P P	5.0		BNL-703
P P	5.6		BNL-722
P P	6.0		ANL-E-399
P P	6.0		ANL-E-401
P P	6.0		ANL-E-425
P P	6.0		ANL-E-427
P P	6.0		ANL-E-431
P P	6.0		ANL-E-439
P P	6.0		ANL-E-444
P P	6.0		ANL-E-446
P P	6.0		ANL-E-451
P P	6.0		ANL-E-453
P P	6.0	12.0	ANL-E-432
P P	6.0	12.0	ANL-E-434
P P	7.0	500.0	FNAL-198A
P P	8.0		ANL-E-415
P P	8.0		KEK-050
P P	8.0	400.0	FNAL-381
P P	9.0		SLAC-BC-064
P P	11.7		ANL-E-421

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
P P	11.7		ANL-E-435
P P	11.7		ANL-E-438
P P	11.7		ANL-E-439
P P	11.7		ANL-E-452
P P	11.7		ANL-E-458
P P	12.0		ANL-E-399
P P	12.0		ANL-E-415
P P	12.0		ANL-E-427
P P	12.0		ANL-E-434
P P	12.0		ANL-E-441
P P	12.0		ANL-E-445
P P	12.0		ANL-E-451
P P	12.0		CERN-WA-055
P P	12.7		ANL-E-452
P P	15.0		BNL-748
P P	20.0		BNL-717
P P	20.0		BNL-748
P P	20.0		CERN-WA-007
P P	20.0		CERN-WA-010
P P	20.0	500.0	FNAL-104
P P	23.0		BNL-748
P P	24.0		BNL-717
P P	25.0	200.0	FNAL-396
P P	26.0		BNL-748
P P	28.5		BNL-748
P P	30.0	300.0	FNAL-552
P P	30.0	400.0	FNAL-313
P P	40.0		CERN-WA-007
P P	40.0		CERN-WA-010
P P	40.0		FNAL-324
P P	50.0		FNAL-061
P P	50.0		FNAL-110A
P P	50.0		FNAL-118A
P P	50.0	200.0	CERN-WA-006
P P	50.0	400.0	FNAL-522
P P	60.0		CERN-WA-007
P P	70.0		SERP-E-100
P P	70.0		SERP-E-110
P P	80.0		CERN-WA-007
P P	80.0		CERN-WA-009
P P	80.0		CERN-WA-010
P P	80.0		FNAL-324
P P	100.0		FNAL-061
P P	100.0		FNAL-110A
P P	100.0		FNAL-118A
P P	100.0		FNAL-350
P P	100.0		FNAL-597
P P	100.0	250.0	CERN-NA-024
P P	100.0	300.0	CERN-NA-008
P P	100.0	340.0	FNAL-581
P P	100.0	500.0	FNAL-095A
P P	150.0		FNAL-061
P P	150.0		FNAL-118A
P P	160.0		FNAL-324
P P	175.0		FNAL-663
P P	200.0		FNAL-110A
P P	200.0		FNAL-177A
P P	200.0		FNAL-369
P P	200.0		FNAL-395
P P	200.0		FNAL-557
P P	200.0		FNAL-570
P P	200.0	400.0	CERN-NA-005
P P	212.2		CERN-R-420
P P	250.0		CERN-NA-022
P P	250.0		FNAL-118A
P P	257.0	2047.5	CERN-R-209
P P	257.0	2047.5	CERN-R-415
P P	257.0	2047.5	CERN-R-416
P P	257.0	2047.5	CERN-R-807
P P	281.0	2114.1	CERN-R-702
P P	293.3		CERN-R-108
P P	293.3	2094.0	CERN-R-210
P P	300.0		FNAL-395
P P	300.0		FNAL-404
P P	300.0		FNAL-557
P P	>360.0		CERN-NA-023
P P	400.0		CERN-NA-016
P P	400.0		FNAL-177A
P P	400.0		FNAL-404
P P	400.0		FNAL-441
P P	400.0		FNAL-557
P P	400.0		FNAL-609
P P	478.7	2047.5	CERN-R-110
P P	478.7	2047.5	CERN-R-211
P P	478.7	2047.5	CERN-R-501
P P	478.7	2047.5	CERN-R-607
P P	478.7	2047.5	CERN-R-806
P P	498.0		CERN-R-108
P P	1030.7		CERN-R-109
P P	1030.7		CERN-R-421
P P	1068.6		CERN-R-108

BEAM-TARGET-MOMENTUM INDEX

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
P P	1440.0		CERN-R-109
P P	1440.0		CERN-R-420
P P	1441.8		CERN-R-606
P P	1479.1		CERN-R-108
P P	2047.5		CERN-R-109
P P	2047.5		CERN-R-419
P P	2047.5		CERN-R-421
P P	2047.5		CERN-R-608
P P	2074.0		CERN-R-108
P P	2114.1		CERN-R-420
P P	1.6E+05		CERN-R-703-T
P N	?		KEK-075
P N	1.0	3.0	ANL-E-460
P N	1.0	12.0	ANL-E-449
P N	1.7		ANL-E-437
P N	6.0		ANL-E-427
P N	6.0		ANL-E-433
P N	8.0	400.0	FNAL-381
P N	12.0		ANL-E-427
P N	24.0		CERN-PS-156
P N	70.0		SERP-E-110
P DEUT	1.0	3.0	ANL-E-460
P DEUT	1.0	12.0	ANL-E-449
P DEUT	1.3		ANL-E-437
P DEUT	1.7		ANL-E-437
P DEUT	2.3		ANL-E-437
P DEUT	7.0	500.0	FNAL-198A
P DEUT	8.0	400.0	FNAL-381
P DEUT	20.0		BNL-717
P DEUT	20.0	500.0	FNAL-104
P DEUT	24.0		BNL-717
P DEUT	25.0	200.0	FNAL-396
P DEUT	30.0	300.0	FNAL-552
P DEUT	50.0		FNAL-118A
P DEUT	70.0		SERP-E-100
P DEUT	100.0		FNAL-118A
P DEUT	150.0		FNAL-118A
P DEUT	250.0		FNAL-118A
P DEUT	517.2		CERN-R-417
P DEUT	722.0		CERN-R-417
P DEUT	1025.8		CERN-R-417
P HE	6.0		ANL-E-351
P HE	8.0	500.0	FNAL-289
P HE	480.8		CERN-R-418
P HE	989.9		CERN-R-418
P BE	28.0		BNL-744
P BE	70.0		SERP-E-101
P BE	400.0		CERN-NA-020
P BE	400.0		FNAL-326
P BE	400.0		FNAL-400
P BE	400.0		FNAL-469
P BE	400.0		FNAL-555
P C	0.2		FNAL-444
P C	200.0		FNAL-369
P C	400.0		FNAL-547
P NE	400.0		FNAL-291
P MG	100.0		FNAL-597
P AL	400.0		FNAL-547
P CR	500.0		FNAL-524
P FE	70.0		SERP-E-114
P FE	400.0		FNAL-439
P CU	70.0		SERP-E-101
P CU	400.0		CERN-WA-041
P CU	400.0		CERN-WA-043
P CU	400.0		CERN-WA-054
P AG	500.0		FNAL-524
P TA	5.0		KEK-053
P WT	28.0		BNL-720
P WT	30.0		BNL-719
P WT	500.0		FNAL-524
P PT	28.3		BNL-721
P AU	100.0		FNAL-597
P PB	400.0		FNAL-547
P U	10.0	20.0	CERN-PS-155
P U	12.3		ANL-E-424
P U	20.0		CERN-PS-162
P NUCLEUS	?		FNAL-379
P NUCLEUS		<13.0	KEK-082
P NUCLEUS	1.0		SERP-E-127
P NUCLEUS	1.0	12.3	ANL-E-422
P NUCLEUS	>1.0		BNL-739
P NUCLEUS	1.5		BNL-718
P NUCLEUS	4.0	12.0	KEK-045
P NUCLEUS	5.0	16.0	BNL-712
P NUCLEUS	10.0	500.0	FNAL-442
P NUCLEUS	13.0		KEK-066
P NUCLEUS	15.0		BNL-676
P NUCLEUS	20.0	150.0	CERN-WA-035
P NUCLEUS	20.0	400.0	FNAL-591
P NUCLEUS	21.0		BNL-676
P NUCLEUS	28.0		BNL-718

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
P NUCLEUS	29.0		BNL-676
P NUCLEUS	40.0		CERN-WA-039
P NUCLEUS	50.0	200.0	FNAL-081A
P NUCLEUS	70.0		SERP-E-120
P NUCLEUS	70.0		SERP-E-121
P NUCLEUS	70.0		SERP-E-144
P NUCLEUS	100.0		CERN-WA-032
P NUCLEUS	100.0		FNAL-451
P NUCLEUS	100.0	1000.0	FNAL-631
P NUCLEUS	200.0		FNAL-565
P NUCLEUS	200.0		FNAL-629
P NUCLEUS	200.0	300.0	FNAL-466
P NUCLEUS	250.0		CERN-NA-022
P NUCLEUS	300.0		FNAL-505
P NUCLEUS	400.0		CERN-WA-020
P NUCLEUS	400.0		CERN-WA-038
P NUCLEUS	400.0		CERN-WA-052
P NUCLEUS	400.0		CERN-WA-065
P NUCLEUS	400.0		CERN-WA-066
P NUCLEUS	400.0		FNAL-468
P NUCLEUS	400.0		FNAL-495
P NUCLEUS	400.0		FNAL-499
P NUCLEUS	400.0		FNAL-549
P NUCLEUS	400.0		FNAL-565
P NUCLEUS	400.0		FNAL-575
P NUCLEUS	400.0		FNAL-592
P NUCLEUS	400.0		FNAL-596
P NUCLEUS	400.0		FNAL-605
P NUCLEUS	400.0		FNAL-608
P NUCLEUS	400.0		FNAL-613
P NUCLEUS	400.0	450.0	FNAL-622
P NUCLEUS	450.0		CERN-WA-068
P NUCLEUS	500.0		FNAL-288
P NUCLEUS	500.0		FNAL-494
P NUCLEUS	500.0		FNAL-508
P NUCLEUS	500.0		FNAL-576
P	2.0	20.0	CERN-PS-164
N P	0.	400.0	CERN-NA-006
N P	2.0		ANL-E-425
N P	3.0		ANL-E-425
N P	6.0		ANL-E-425
N P	6.0		ANL-E-444
N P	10.0	28.0	BNL-766-I
N P	25.0	200.0	FNAL-396
N DEUT	25.0	200.0	FNAL-396
N BE	30.0	300.0	FNAL-438
N C	30.0	300.0	FNAL-438
N C	45.0		SERP-E-104
N AL	30.0	300.0	FNAL-438
N FE	30.0	300.0	FNAL-438
N CU	30.0	300.0	FNAL-438
N CD	30.0	300.0	FNAL-438
N WT	30.0	300.0	FNAL-438
N PB	30.0	300.0	FNAL-438
N U	30.0	300.0	FNAL-438
N NUCLEUS	40.0	60.0	SERP-E-146
N NUCLEUS	300.0		FNAL-540
N NUCLEUS	300.0		FNAL-630
AN P	0.1	0.5	BNL-767
AN NUCLEUS	0.	1.0	CERN-PS-179
AP P	?		FNAL-236A
AP P	0.		BNL-643
AP P	0.		CERN-PS-142
AP P	0.		CERN-PS-170
AP P	0.		CERN-PS-171
AP P	0.		CERN-PS-174
AP P	0.		CERN-PS-175
AP P	0.	0.5	BNL-708
AP P	0.	0.5	CERN-PS-161
AP P	0.	0.6	ANL-E-368
AP P	0.	1.0	CERN-PS-179
AP P	0.	2.0	CERN-PS-170
AP P	0.2	0.5	CERN-PS-173
AP P	0.2	2.0	CERN-PS-172
AP P	0.3	0.6	CERN-T-250
AP P	0.3	2.0	CERN-PS-172
AP P	0.3	2.0	CERN-PS-178
AP P	0.3	0.5	BNL-762
AP P	0.3	0.6	CERN-T-239
AP P	0.4	0.6	BNL-742
AP P	0.4	0.9	BNL-730
AP P	0.4	0.9	BNL-733
AP P	0.4	0.9	BNL-738
AP P	0.4	1.0	CERN-PS-163-2
AP P	0.4	0.7	KEK-033
AP P	0.5	1.0	KEK-074
AP P	0.8	1.3	CERN-PS-163-1
AP P	1.2	3.0	BNL-644
AP P	3.0	5.0	KEK-062
AP P	3.5	7.5	CERN-R-704
AP P	4.0	10.0	BNL-596

BEAM-TARGET-MOMENTUM INDEX

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
AP P	4.1		ANL-E-429
AP P	5.0	10.0	CERN-WA-013
AP P	6.1		SLAC-BC-068
AP P	7.0		BNL-771
AP P	7.9		CERN-WA-029
AP P	8.0		BNL-715
AP P	8.3		SLAC-E-129
AP P	8.9		SLAC-BC-068
AP P	9.0		SLAC-BC-064
AP P	10.0		SLAC-E-127
AP P	10.0	15.0	BNL-726
AP P	12.0		CERN-WA-049
AP P	13.0		SERP-E-116
AP P	13.0		SLAC-E-129
AP P	15.0		CERN-WA-029
AP P	16.0		CERN-WA-049
AP P	20.0		CERN-WA-007
AP P	20.0		CERN-WA-010
AP P	20.0	500.0	FNAL-104
AP P	25.0		SERP-E-116
AP P	25.0	200.0	FNAL-396
AP P	30.0	140.0	CERN-WA-009
AP P	32.0		SERP-E-138
AP P	32.1		SERP-E-122
AP P	40.0		CERN-WA-007
AP P	40.0		CERN-WA-010
AP P	40.0		FNAL-324
AP P	40.0		SERP-E-116
AP P	50.0		CERN-NA-021
AP P	50.0		FNAL-110A
AP P	60.0		CERN-WA-007
AP P	70.0		CERN-WA-031
AP P	80.0		CERN-WA-007
AP P	80.0		CERN-WA-010
AP P	80.0		FNAL-324
AP P	80.0	130.0	CERN-WA-042
AP P	100.0		CERN-NA-021
AP P	100.0		FNAL-110A
AP P	100.0		FNAL-350
AP P	100.0		FNAL-597
AP P	100.0	340.0	FNAL-581
AP P	160.0		FNAL-324
AP P	175.0		FNAL-663
AP P	200.0		FNAL-110A
AP P	200.0		FNAL-557
AP P	200.0		FNAL-570
AP P	200.0		FNAL-577
AP P	200.0	400.0	CERN-NA-005
AP P	212.2		CERN-R-420
AP P	257.0	2047.5	CERN-R-807
AP P	293.3	2094.0	CERN-R-210
AP P	300.0		FNAL-557
AP P	400.0		FNAL-557
AP P	478.7	2047.5	CERN-R-211
AP P	1030.7		CERN-R-421
AP P	1440.0		CERN-R-420
AP P	2047.5		CERN-R-421
AP P	2114.1		CERN-R-420
AP P	5328.0	1.6E+05	CERN-UA-04
AP P	1.6E+05		CERN-R-703-T
AP P	1.6E+05		CERN-UA-01
AP P	1.6E+05		CERN-UA-02
AP P	1.6E+05		CERN-UA-03
AP P	1.6E+05		CERN-UA-05
AP N	0.3	0.6	CERN-T-250
AP N	9.0		SLAC-BC-070
AP DEUT	?		CERN-T-250
AP DEUT	0.		BNL-643
AP DEUT	0.		CERN-PS-174
AP DEUT	0.		CERN-PS-175
AP DEUT	0.	0.5	CERN-PS-161
AP DEUT	0.	1.0	CERN-PS-179
AP DEUT	0.5		BNL-701
AP DEUT	0.8	1.3	CERN-PS-163-1
AP DEUT	6.1		SLAC-BC-068
AP DEUT	8.9		SLAC-BC-068
AP DEUT	12.0		CERN-T-246-248
AP DEUT	20.0	500.0	FNAL-104
AP DEUT	25.0	200.0	FNAL-396
AP DEUT	80.0	130.0	CERN-WA-042
AP HE3	0.	1.0	CERN-PS-179
AP HE	0.		BNL-643
AP HE	0.	1.0	CERN-PS-179
AP LI6	0.		CERN-PS-158
AP LI7	0.		CERN-PS-158
AP NE	0.	1.0	CERN-PS-179
AP MG	100.0		FNAL-597
AP AR	0.	1.0	CERN-PS-179
AP AU	100.0		FNAL-597
AP NUCLEUS	?		BNL-694
AP NUCLEUS	?		FNAL-379
AP NUCLEUS	0.		CERN-PS-176
AP NUCLEUS	0.		CERN-PS-177
AP NUCLEUS	0.	0.5	CERN-PS-161
AP NUCLEUS	20.0	150.0	CERN-WA-035
AP NUCLEUS	40.0		CERN-WA-039
AP NUCLEUS	70.0		CERN-WA-061
AP NUCLEUS	100.0	400.0	FNAL-537
AP NUCLEUS	150.0		FNAL-272
AP NUCLEUS	300.0		FNAL-272
AP	2.0	20.0	CERN-PS-164
LAMBDA P	30.0	60.0	SERP-E-120
LAMBDA DEUT	30.0	60.0	SERP-E-120
LAMBDA NUCLEUS	80.0	350.0	FNAL-619
LAMBDA	?		KEK-049
LAMBDA	6.0	15.0	BNL-597
LAMBDA	20.0	60.0	SERP-E-120
LAMBDA	60.0	200.0	FNAL-361
LAMBDA	150.0	210.0	FNAL-440
SIGMA+ P	30.0	60.0	SERP-E-120
SIGMA+ P	100.0	350.0	FNAL-497
SIGMA+ DEUT	30.0	60.0	SERP-E-120
SIGMA+	?		KEK-092
SIGMA+	20.0	60.0	SERP-E-120
SIGMA+	100.0	\	CERN-WA-002
SIGMA+	120.0	250.0	FNAL-620
SIGMA- P	30.0	60.0	SERP-E-120
SIGMA- P	80.0	130.0	CERN-WA-042
SIGMA- P	100.0	350.0	FNAL-497
SIGMA- DEUT	30.0	60.0	SERP-E-120
SIGMA- DEUT	80.0	130.0	CERN-WA-042
SIGMA- BE	135.0		CERN-WA-062
SIGMA- NUCLEUS	0.		BNL-723
SIGMA- NUCLEUS	1.0		SERP-E-127
SIGMA- NUCLEUS	20.0	350.0	FNAL-666
SIGMA-	20.0	60.0	SERP-E-120
SIGMA-	100.0		CERN-WA-002
SIGMA-	100.0		CERN-WA-046
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XIO DEUT	30.0	60.0	SERP-E-120
XIO	20.0	60.0	SERP-E-120
XI- P	30.0	60.0	SERP-E-120
XI- P	80.0	130.0	CERN-WA-042
XI- P	100.0	350.0	FNAL-497
XI- DEUT	30.0	60.0	SERP-E-120
XI- DEUT	80.0	130.0	CERN-WA-042
XI-	20.0	60.0	SERP-E-120
XI-	100.0		CERN-WA-002
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CHARGED- P	85.0		CERN-WA-063
CHARGED-	10.0	40.0	SERP-E-132
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ACCELERATOR VOCABULARY

ANL	Argonne (ZGS) Proton Synchrotron (12.7 GeV plab)
BNL	Brookhaven (AGS) Proton Synchrotron (33 GeV plab)
CERN	CERN (PS) Proton Synchrotron (28 GeV plab)
CERN-ISR	CERN (ISR) Proton-Proton ISR (62 GeV ecm)
CERN-PBAR/P	CERN $p\bar{p}$ Collider (540 GeV ecm)
CERN-SPS	CERN (SPS) Super Proton Synchrotron (450 GeV plab)
DESY	Hamburg Deutches Electron Synchrotron (7.5 GeV plab)
DESY-DORIS	Hamburg (Doris) Electron-Positron Ring (11.6 GeV ecm)
DESY-PETRA	PETRA e^+e^- Colliding Beams (40 GeV ecm)
FNAL	FNAL Batavia Proton Synchrotron (500 GeV plab)
KEK	KEK (Japan) Proton Synchrotron (13 GeV plab)
RHEL	Rutherford (Nimrod) Proton Synchrotron (8 GeV plab)
SERP	IHEP Serpukhov Proton Synchrotron (76 GeV plab)
SLAC	Stanford Electron Linear Accelerator (33 GeV plab)
SLAC-PEP	SLAC Positron-Electron Project (36 GeV ecm)
SLAC-SPEAR	Stanford (SPEAR) Electron-Positron Ring (8.4 GeV ecm)
TOKY	INS Tokyo Electron Synchrotron (1.3 GeV plab)

DETECTOR VOCABULARY

For bubble chambers we use a construction such as

DBC-2M

or

HBC-15FT-HYB

or

HLBC-BEBC-TST.

The first element, one of

HBC
DBC
HEBC
HLBC,

tells whether the chamber fill is hydrogen, deuterium, helium, or heavy liquid. The second element gives the size or name of the chamber. Where appropriate, a third element, one of

HYB
RAP
TST,

indicates that the chamber is part of a hybrid system, or that it is rapid cycling, or that it contains a track-sensitive target.

For non-bubble-chamber detectors the abbreviations are:

General:

CALO	calorimeter
CNTR	counters (no chambers)
COMB	combinations of different types of detectors, no particular one dominant
EMUL	emulsion or a detector like lexan where tracks are frozen in a solid medium
OSPK	optical spark chambers
OTHER	rare non-electronic detectors (e.g., moon, ocean floor)

DETECTOR VOCABULARY (CONT'D)

STRC	streamer chamber
TRAD	transition radiation detector
WIRE	wire chambers (proportional wire chambers, drift chambers). Includes all non-optical spark by convention
WAS	wide angle spectrometer

For a spectrometer system, including magnets for momentum analysis:

DAS	double arm spectrometer
SAS	single arm spectrometer
SPEC	general spectrometer system not fitting one of the above or where specific type not given

Acronyms for specific detectors:

ARGUS	DESY-DORIS detector system
ASTRON	ITEP wide angle spectrometer at Serpukhov
CCS	Chicago cyclotron spectrometer at FNAL
CELLO	DESY-PETRA spectrometer system
CRYS-BALL	SLAC-SPEAR and PEP large solid angle neutral detector
DASP	DESY-DORIS double arm spectrometer system
DELCO	SLAC-SPEAR and PEP detector system
EHS	European hybrid spectrometer at CERN-SPS
EMS	ANL effective mass spectrometer
FMPS	Fermilab multiparticle spectrometer
GAMS	gamma spectrometer at Serpukhov
HPW	HARV-PENN-WISC neutrino detector at BNL
HRS	SLAC-PEP high resolution spectrometer
JADE	DESY-PETRA spectrometer system
LAB-E	FNAL 1100-ton target-calorimeter muon-spectrometer detector for neutrino physics
LASS	SLAC large aperture solenoid spectrometer
LENA	DESY-DORIS detector system
MAC	SLAC-PEP magnetic calorimeter
MARK-J	DESY-PETRA spectrometer system
MARK-2	SLAC-SPEAR and PEP spectrometer system
MARK-3	SLAC-SPEAR spectrometer system (not related to MARK-2)
MPS	BNL multiparticle spectrometer
MPS-II	updated BNL MPS
NICE	non-magnetic precision spectrometer at Serpukhov
OMEGA	CERN OMEGA spectrometer
OMEGAPRIME	upgraded CERN OMEGA spectrometer
PLUTO	DESY-DORIS and PETRA superconducting solenoid spectrometer
RMS	Rutherford multiparticle spectrometer, now at CERN
SASF	single arm spectrometer facility at FNAL
SFM	CERN-ISR split field magnet
SIGMA	CERN-IHEP magnetic spectrometer at Serpukhov
SPEC-6M	SERP 6-m spectrometer system
SSF	SLAC spectrometer facility - 1.6, 8, and/or 20 GeV
TASSO	DESY-PETRA spectrometer system
TELAS	KEK target-embodied large-aperture spectrometer
TOKIWA	KEK spectrometer
TPC	SLAC-PEP time projection chamber
WA1	CERN-DORT-HEID-SACL-BGNA neutrino detector at SPS
2-GAMMA	SLAC-PEP detector to study 2-gamma process

REACTION DATA DESCRIPTOR VOCABULARY

The data descriptors refer to the nature of the data to be taken in an experiment. Any of the variables below can also be understood to refer to functions (including averages or other moments, but not derivatives or integrals) of that variable, unless such functions involve other variables from the list. For data which are to be presented as a function of two variables, such as a scatter plot, combinations such as MASS*MASS are used.

GENERAL

CS — Cross section, cross section ratio, and cross section upper limit. Can also be listed for very rare reactions whose existence is being established, even though the number of events has not been converted to a cross section. Does not include parametrizations of the cross section, e.g., as a function of energy.

ANGP — Production angular distribution, i.e., of one or more of the outgoing particles relative to one of the incident particles. Includes $d\sigma/d\Omega$, $d\sigma/dt$, $d\sigma/dt'$, $d\sigma/dQ^2$, etc. Also the equivalent, expressed as moments or polynomial expansion coefficients. Also invariant cross section as a function of production angle or t. By convention, does not include rapidity or its approximation, $y \simeq -\ell n \tan \theta/2$ (see P). Includes impact parameters and slopes of $d\sigma/dt$.

ANG — Angular distribution between or among particles in the final state. Includes also angular distribution involving decay product of particles listed in the reaction, even though those decay products are not themselves explicitly listed. Includes angles used to study the decay of a system produced in the final state, even though the coordinate system axes may be defined with respect to the incident particles (e.g., Jackson angles, etc.) Also the equivalent, expressed as moments, etc.

MASS — Mass spectrum, mass^2 spectrum, or invariant cross section as a function of mass or mass squared.

PT — Transverse momentum (p_T) spectrum, p_T^2 spectrum, or invariant cross section as a function of p_T. Does not include momentum transfer spectrum (see ANGP). Includes transverse mass $= (p_T^2+m^2)^{1/2}$, unless the particle mass (m) is also variable.

REACTION DATA DESCRIPTOR VOCABULARY (CONT'D)

P — Any function of outgoing momentum or energy not included in any of the above. Includes, E, y (rapidity, also rapidity gaps), $x(=p^*_{||}/p^*_{max})$, $p_{||}$, or other momentum or energy variable.

FV — (for proposals only) Experiment proposes to measure complete four-vectors, without specifying exactly what analysis of them will be done.

AMPLITUDES

Functions linear in the amplitudes (i.e., involving the phases).

PWA — Partial-wave amplitudes. Includes formation partial waves and production partial waves. Any attempt to measure amplitudes of definite j (angular momentum). Includes scattering length and effective range.

AMP — Amplitude not decomposed into states of definite j. RE/IM ratio, helicity amplitude, etc.

VARIABLES RELATED TO SPIN

DME — Density matrix elements, including joint density matrix elements.

POL — Final state spin-1/2 polarization measurement. Includes Wolfenstein spin rotation parameters. Includes measurement of asymmetry off a polarized target when it is equal to the final state polarization.

ASYM — Asymmetry in scattering off a polarized target and/or with a polarized beam (with exception of special case noted under POL).

MULTIPLICITIES

MULT — Multiplicity distribution, its average, ratio, or moments. Generally used in association with final states of the form N(PRONG), N(HADRON), etc., so that the individual final states are usually not listed.

KINEMATIC VARIABLE VOCABULARY

The Beam "momentum" designation given in parentheses following the numerical value and units can be one of the following:

PLAB	beam momentum in the lab frame.
ELAB	beam energy in the lab frame.
TLAB	beam kinetic energy in the lab frame.
ECM	total energy in the CM frame.
S	total CM energy squared.

For colliding beam experiments, the momentum of the second beam is given indented below that of the first. Alternatively, a single line with the total center-of-mass energy or equivalent lab beam momentum may be given.

For electroproduction or other reactions involving a virtual photon, the second and third lines indented below the beam momentum specify the equivalent of the mass and momentum of the virtual photon. These can have the following designations:

W	mass of the target-virtual photon system.
W2	square of W.
Q2	absolute value of the mass squared of the virtual photon = absolute value of the squared 4-momentum transfer to the electron.
NU	energy of the virtual photon in the lab frame = energy loss of the electron in the lab frame.

PARTICLE PROPERTY DESCRIPTOR VOCABULARY

The following descriptors are used to designate various types of particle property data:

MASS Mass or mass difference.

W Total width, total rate, mean life. Also differences and ratios of these.

PW Partial width, partial rate, as well as any ratio or product of these such as branching ratio or integrated cross section. Also upper limits on these. Also differences of these unless included in DEC (DEC^{+-0}_{+-0} includes charge asymmetry δ for $K_L \to \pi \ell \nu$, η for $K_L \to \pi^+\pi^-$, x+iy for $K_S \to \pi^+\pi^-\pi^0$).

MOM Electric moment, magnetic moment, charge radius, moment ratios.

DEC Weak or electromagnetic decay parameter as defined by Review of Particle Properties, Rev. of Mod. Physics 52, No. 2, Part II, April 1980, Sec. VI.

ρ, η, ξ, δ, h, $\lvert g_A/g_V \rvert$, ϕ_{AV}, g_S, g_T, g_P	for μ decay
slopes g and slope difference σ(CP viol)	for $K \to 3\pi$
form factors f_+, f_-, f_0, λ_+, λ_-, λ_0, ξ, f_S, f_T	for $K \to \pi \ell \nu$
CP violation parameter x+iy	for $K_S \to \pi^+\pi^-\pi^0$
charge asymmetry δ	for $K_L \to \pi \ell \nu$
CP viol. parameters η_{+-}, η_{00}, ϕ_{+-}, ϕ_{00}, ε, ε'	for $K_L \to \pi\pi$
$\Delta S \neq \Delta Q$ parameter x	for $K^0 \to \pi^+ \ell^- \nu$ or $\bar{K}^0 \to \pi^- \ell^+ \nu$
charge asymmetry	for η decay
$\lvert g_A/g_V \rvert$, δ, α, β, γ, ϕ, Δ	for baryon decay

QN Quantum numbers.

EX Existence (e.g., particle search result, even if negative, or evidence for presence in a mass spectrum).

INSTITUTION VOCABULARY

AACH	Phys. Inst. der Tech. Hochschule	Aachen, Germany
AARH	Aarhus Univ.	Aarhus, Denmark
ABAD	Abadan Inst. of Technology	Abadan, Iran
AICH	Aichi Educational Univ.	Toyota, Aichi Pref., Japan
AIKO	Inst. Kernphysics Onderzoek	Amsterdam, Netherlands
AKIT	Akita Univ.	Akita, Japan
ALBA	State Univ. of New York at Albany	Albany, NY, USA
ALMA	Kazakh Inst. for High Energy Physics	Alma-Ata, USSR
AMER	American Univ.	Washington, DC, USA
AMES	Ames Lab	Ames, Iowa, USA
AMST	Univ. of Amsterdam	Amsterdam, Netherlands
ANIK	Amsterdam Nikhef	Amsterdam, Netherlands
ANKA	Middle East Technical Univ.	Ankara, Turkey
ANL	Argonne Nat. Lab.	Argonne, Ill., USA
ARIZ	Univ. of Arizona	Tucson, Ariz., USA
ATEN	Nuclear Res. Centre Demokritos	Athens, Greece
AWRE	Atomic Weapons Research Establishment	Aldermaston, England
BARI	Univ. di Bari	Bari, Italy
BASL	Basle Univ.	Basle, Switzerland
BEDF	Bedford College	London, England
BEIJ	Beijing Univ.	Beijing, China
BELG	Inst. Interuniv. des Sci. Nuclear	Bruxelles, Belgium
BERG	Fysisk Institutt	Bergen, Norway
BERL	Inst. Hochenergiephys. DAW	Zeuthen/Berlin, DDR
BERN	Univ. Bern	Bern, Switzerland
BGNA	Univ. di Bologna	Bologna, Italy
BHEP	Inst. of High Energy Physics	Beijing, China
BIEL	Univ. Bielefeld	Bielefeld, Germany
BIRK	Birkbeck College	London, England
BIRM	Birmingham Univ.	Birmingham, England
BNL	Brookhaven National Lab.	Upton, L.I., NY, USA
BOHR	Niels Bohr Institute	Copenhagen, Denmark
BOMB	Bombay Univ.	Bombay, India
BONN	Univ. Bonn	Bonn, Germany
BOST	Boston Univ.	Boston, Mass., USA
BRAN	Brandeis Univ.	Waltham, Mass., USA
BRCO	British Columbia Univ.	Vancouver, Canada
BRIS	H. H. Wills Phys. Lab., U. of Bristol	Bristol, England
BROW	Brown Univ.	Providence, RI, USA
BRUX	Univ. Libre de Bruxelles	Bruxelles, Belgium
BTL	Bell Telephone Labs.	Murray Hill, NJ, USA
BUDA	Central Research Institute of Physics	Budapest, Hungary
BUFF	State Univ. of New York at Buffalo	Buffalo, NY, USA
CAMB	Cambridge Univ.	Cambridge, England
CALC	Univ. of Calcutta	Calcutta, India
CARL	Carlton Univ.	Ottawa, Canada
CASE	Case Western Reserve Univ.	Cleveland, Ohio, USA
CAVE	Cavendish Lab., Cambridge Univ.	Cambridge, England
CDEF	College de France	Paris, France
CERN	European Org. for Nuclear Research	Geneva, Switzerland

INSTITUTION VOCABULARY (CONT'D)

CHIC	Univ. of Chicago	Chicago, Ill., USA
CINC	Univ. of Cincinnati	Cincinnati, Ohio, USA
CIT	Calif. Institute of Technology	Pasadena, Calif., USA
CLER	Univ. de Clermont-Ferrand	Clermont-Ferrand, France
CMU	Carnegie-Mellon Univ.	Pittsburgh, PA, USA
COLO	Univ. of Colorado	Boulder, Colo., USA
COLU	Columbia Univ.	New York, NY, USA
COPE	Copenhagen Univ.	Copenhagen, Denmark
CORN	Cornell Univ.	Ithaca, NY, USA
CRAC	Inst. for Nuclear Research	Cracow, Poland
CUNY	City Univ. of New York	New York, NY, USA
CURI	Pierre et Marie Curie Univ., Paris VI	Paris, France
DARE	Daresbury Nuclear Physics Lab.	Daresbury, England
DESY	Deutsches Elektronen-Synch.	Hamburg, Germany
DOE	Department of Energy	Washington D.C., USA
DORT	Univ. Dortmund	Dortmund-Hornbruch, Germany
DUKE	Duke Univ.	Durham, NC, USA
DUUC	University College	Dublin, Ireland
EDIN	Univ. of Edinburgh	Edinburgh, Scotland
EFI	Enrico Fermi Inst. for Nuclear Studies	Chicago, Ill., USA
ELMT	Elmhurst College	Elmhurst, Ill., USA
EPOL	Ecole Polytechnique	Palaiseau, France
ERLA	Univ. Erlangen	Erlangen, Germany
ETHZ	Swiss Federal Inst. of Technology	Zurich, Switzerland
FIRZ	Univ. di Firenze	Firenze, Italy
FNAL	Fermi National Accelerator Lab.	Batavia, Ill., USA
FRAS	Lab. Nazionali del Sincrotrone	Frascati, Italy
FREI	Univ. Freiburg	Freiburg, Germany
FSU	Florida State Univ.	Tallahassee, Fla., USA
GENO	Univ. di Genova	Genova, Italy
GESC	General Electric R and D Center	Schenectady, NY, USA
GEVA	Univ. de Geneve	Geneva, Switzerland
GIT	Georgia Inst. Tech.	Atlanta, Georgia, USA
GLAS	Univ. of Glasgow	Glasgow, Scotland
GMAS	George Mason Univ.	Fairfax, VA, USA
GUIL	Univ. of Surrey at Guilford	Guilford, Surrey, England
HAIF	Technion - Israel Inst. of Technology	Haifa, Israel
HAMB	Univ. Hamburg	Hamburg, Germany
HARV	Harvard Univ.	Cambridge, Mass., USA
HAWA	Univ. of Hawaii	Honolulu, Hawaii, USA
HEID	Univ. Heidelberg	Heidelberg, Germany
HELS	Helsingin Yliopisto	Helsinki, Finland
HIRO	Hiroshima Univ.	Hiroshima, Japan
HOUS	Univ. of Houston	Houston, Texas, USA
HRSK	Hirosaki Univ.	Hirosaki, Japan
IIT	Illinois Inst. of Tech.	Chicago, Ill., USA
ILL	Univ. of Illinois	Urbana, Ill., USA
ILLC	Univ. of Illinois at Chicago	Chicago, Ill., USA
IND	Univ. of Indiana	Bloomington, Ind., USA
INNS	Innsbruck Univ.	Innsbruck, Austria

INSTITUTION VOCABULARY (CONT'D)

INUS	Inst. for Nuclear Study at Tokyo Univ.	Tokyo, Japan
IPN	Inst. de Phys. Nucleaire	Orsay, France
ISU	Iowa State Univ.	Ames, Iowa, USA
ITEP	Inst. for Teor. and Exp. Physics	Moscow, USSR
JAPN	Japan Univ. Group Collaboration	Japan
JHU	Johns Hopkins Univ.	Baltimore, Md., USA
JINR	Joint Inst. for Nuclear Research	Dubna, USSR
KANS	Univ. of Kansas	Lawrence, Kansas, USA
KARL	Technische Univ. Karlsruhe	Karlsruhe, Germany
KEK	Nat. Lab for High Energy Phys., Japan	Tsukuba-gun, Japan
KFZK	Kernforschungszentrum, Karlsruhe	Leopoldshaven, Germany
KHAR	Physico-Tech. Inst., Acad. Sci., Ukr.SSR	Kharkov, USSR
KIAE	Kurchatov Inst. of Atomic Energy	Moscow, USSR
KIEL	Kiel Univ.	Kiel, Germany
KIMC	Industrial Medical College	Kitakyushu, Japan
KOBE	Kobe Univ.	Kobe, Japan
KONA	Konan Univ.	Kobe, Japan
KOSI	Czech. Acad. Sci. Inst. Exp. Phys.	Kosice, Czechoslovakia
KWAN	Kwansai Gakuin Univ.	Hyogo-ken, Japan
KYOT	Kyoto Univ.	Kyoto, Japan
LALO	Linear Accelerator Lab, Orsay	Orsay, France
LANC	Lancaster Univ.	Lancaster, England
LAPP	Lapp Univ.	Annecy, France
LASL	U. C. Los Alamos Scientific Lab.	Los Alamos, NM, USA
LAUS	Univ. of Lausanne	Lausanne, Switzerland
LBL	U. C. Lawrence Berkeley Lab.	Berkeley, Calif., USA
LEBD	Lebedev Physics Inst.	Moscow, USSR
LEHI	Lehigh Univ.	Bethlehem, PA, USA
LENI	Inst. of Nucl. Phys., Akad. Nauk USSR	Leningrad, USSR
LENU	Leningrad State Univ.	Leningrad, USSR
LIBH	Lab Interuniv. Belge High Energy	Brussels, Belgium
LISB	Nova Univ. de Lisbon	Lisbon, Portugal
LIVP	Liverpool Univ.	Liverpool, England
LJUB	Univ. of Ljubljana	Ljubljana, Yugoslavia
LOIC	Imperial Col. of Science and Tech.	London, England
LOQM	Queen Mary College	London, England
LOUC	University College	London, England
LOWC	Westfield College	London, England
LPGP	Lab. de Phys. General, Univ. Paris	Paris, France
LPNP	Paris Univ. VII, LPNHE	Paris, France
LSU	Louisiana State Univ.	Baton Rouge, LA, USA
LUND	Lund Univ.	Lund, Sweden
LVLN	Univ. Catholique de Louvain	Louvain-la-Neuve, Belg.
LYON	Inst. de Phys. Nucl., Univ. de Lyon	Villeurbanne, France
MADR	Junta de Energia Nuclear	Madrid, Spain
MANZ	Univ. Mainz	Mainz, Germany
MASA	Univ. of Massachusetts	Amherst, Mass., USA
MCGI	McGill Univ.	Montreal, Canada
MCHS	Univ. Manchester	Manchester, England
MELB	Univ. of Melbourne	Parkville, Australia

INSTITUTION VOCABULARY (CONT'D)

MEXU	Univ. Nac. Autonoma de Mexico	Mexico City, Mexico
MIAM	Miami Univ.	Miami, FL, USA
MICH	Univ. of Michigan	Ann Arbor, Mich., USA
MILA	Univ. di Milano	Milano, Italy
MINN	Univ. of Minnesota	Minneapolis, Minn., USA
MINR	Institute for Nuclear Research	Moscow, USSR
MIT	Massachusetts Inst. of Technology	Cambridge, Mass., USA
MONS	Univ. de l'Etat, Mons	Mons, Belgium
MOSU	Moscow State Univ. Inst. of Nucl. Phys.	Moscow, USSR
MPEI	Moscow Phys. Eng. Inst.	Moscow, USSR
MPIH	Max-Planck-Inst. fur Phys.-Astrophys.	Heidelberg, Germany
MPIM	Max-Planck-Inst. fur Phys.-Astrophys.	Munich, Germany
MSU	Michigan State Univ.	East Lansing, Mich., USA
MTHO	Mt. Holyoke College	South Hadley, Mass., USA
MUNI	Munich Univ.	Munich, Germany
MURA	Midwestern Univ. Research Assoc.	Stroughton, WI, USA
NADI	Mohamed El-Nadi Research Center	Cairo, Egypt
NAGO	Nagoya Univ.	Nagoya, Japan
NANC	Univ. de Nancy	Nancy, France
NAPL	Univ. di Napoli	Napoli, Italy
NARA	Nara Women's Univ.	Nara, Japan
NARU	Nara Univ.	Nara, Japan
NCCI	North Central College	Naperville, IL, USA
NDAM	Univ. of Notre Dame	Notre Dame, Ind., USA
NEAS	Northeastern Univ.	Boston, Mass., USA
NEUC	Univ. of Neuchatel	Neuchatel, Switzerland
NEVI	Nevis Lab.	Irvington-on-Hudson, NY, USA
NIIG	Niigata Univ.	Niigata, Japan
NIHN	Nihon Univ.	Tokyo, Japan
NIJM	R. K. Univ. Nijmegen	Nijmegen, Netherlands
NILU	Northern Illinois Univ.	Dekalb, Ill., USA
NORD	Nordisk Ins. for Teor. Atomfys.	Copenhagen, Denmark
NOVO	Inst. of Nuclear Physics	Novosibirsk, USSR
NRL	Naval Research Laboratory	Washington, D.C., USA
NRLO	Naval Research Lab	Orlando, FL, USA
NSF	National Science Foundation	Washington, D.C., USA
NTUA	National Technical Univ. of Athens	Athens, Greece
NWES	Northwestern Univ.	Evanston, Ill., USA
NYU	New York Univ.	New York, NY, USA
OAKM	Oakland Univ.	Oakland, Mich., USA
OKAY	Okayama Univ.	Okayama, Japan
OPEN	Open Univ.	Milton Keynes, England
ORNL	Oak Ridge National Lab.	Oak Ridge, Tenn., USA
ORSA	Univ. de Paris, Fac. des Science	Orsay, France
OSAK	Osaka Univ.	Osaka, Japan
OSKC	Osaka City Univ.	Osaka, Japan
OSLO	Oslo Univ.	Oslo, Norway
OSSE	Science Educ. Inst. of Osaka Pref.	Osaka, Japan
OSU	Ohio State Univ.	Columbus, Ohio, USA
OTTA	Univ. of Ottawa	Ottawa, Canada

INSTITUTION VOCABULARY (CONT'D)

OXF	Oxford Univ.	Oxford, England
PADO	Univ. di Padova	Padova, Italy
PARI	Paris Univ. before division in early 70's	Paris, France
PAVI	Univ. di Pavia	Pavia, Italy
PENN	Univ. of Pennsylvania	Philadelphia, PA, USA
PISA	Univ. di Pisa	Pisa, Italy
PITT	Univ. of Pittsburgh	Pittsburgh, PA, USA
PRAG	Institute of Physics, CSAV	Prague, Czechoslovakia
PRIN	Princeton Univ.	Princeton, NJ, USA
PURD	Purdue Univ.	Lafayette, Ind., USA
REHO	Weizmann Inst. of Science	Rehovoth, Israel
RHEL	Rutherford High Energy Lab.	Chilton, Did., Oxon., England
RICE	William Marsh Rice Univ.	Houston, Texas, USA
ROCH	Univ. of Rochester	Rochester, NY, USA
ROCK	Rockefeller Univ.	New York, NY, USA
ROMA	Univ. di Roma	Roma, Italy
RUTG	Rutgers Univ.	New Brunswick, NJ, USA
SACL	Center d'Etudes Nuclear Saclay	Gif-sur-Yvette, France
SAGA	Saga Univ.	Saga, Japan
SAIT	Saitama Univ.	Saitama, Japan
SANT	Univ. de Santander	Santander, Spain
SCUC	Univ. of South Carolina at Columbia	Columbia, SC, USA
SEOU	Korea Univ. at Seoul	Seoul, S. Korea
SERP	Inst. of High Energy Physics	Serpukov, USSR
SHEF	Univ. of Sheffield	Sheffield, Yorks., England
SHIN	Shinshu Univ.	Matsumoto, Japan
SHMP	Univ. of Southampton	Southampton, England
SIEG	Siegen Univ.	Huttental, Germany
SIEM	Siemens Schuckertwerke AG	Erlangen, Germany
SLAC	Stanford Linear Accel. Center	Stanford, Calif., USA
SMAS	Southeastern Massachusetts Univ.	North Dartmouth, Mass., USA
SOFC	High Inst. of Chem. Tech.	Sofia, Bulgaria
SOFI	Bulgarian Acad. of Science	Sofia, Bulgaria
SRIP	State Res. Inst. Photochem. Proj.	Moscow, USSR
STAN	Stanford Univ.	Stanford, Calif., USA
STEV	Stevens Inst. of Tech.	Hoboken, NJ, USA
STOH	Stockholm Univ.	Stockholm, Sweden
STON	State Univ. of New York at Stonybrook	Stonybrook, LI, NY, USA
STRB	Centre des Res. Nucleaires	Strasbourg, France
SUFF	Suffolk Univ.	Suffolk, England
SYDN	Univ. of Sydney	Sydney, Australia
SYRA	Syracuse Univ.	Syracuse, NY, USA
TATA	Tata Inst. of Fundamental Research	Bombay, India
TBIL	Inst. of Phys., Acad. Science	Tbilisi, USSR
TBSU	Tbilisi State Univ.	Tbilisi, USSR
TELA	Univ. of Tel-Aviv	Tel-Aviv, Israel
TEMP	Temple Univ.	Philadelphia, PA, USA
TENN	Univ. of Tennessee	Knoxville, Tenn., USA
THES	Univ. of Thessaloniki	Thessaloniki, Greece
TMSK	Nucl. Phys. Inst., Tomsk Polytech. Inst.	Tomsk, USSR
TMU	Tokyo Metropolitan Univ.	Tokyo, Japan

INSTITUTION VOCABULARY (CONT'D)

TNTO	Univ. of Toronto	Toronto, Canada
TOGA	Tohoku-Gakuin Univ.	Miyagi, Japan
TOHO	Tohoku Univ.	Sendai, Japan
TOKY	Univ. of Tokyo	Tokyo, Japan
TORI	Univ. di Torino	Torino, Italy
TRIU	TRIUMF, Univ. of British Columbia	Vancouver, Canada
TRST	Univ. di Trieste	Trieste, Italy
TSUK	Tsukuba Univ.	Ibaraki, Japan
TUAT	Tokyo Univ. of Agriculture and Tech.	Tokyo, Japan
TUFT	Tufts Univ.	Medford, Mass., USA
TWAS	Waseda Univ.	Tokyo, Japan
UATH	Univ. of Athens	Athens, Greece
UBEL	Univ. of Belgrade	Belgrade, Yugoslavia
UCB	Univ. of Calif. at Berkeley	Berkeley, Calif., USA
UCD	Univ. of Calif. at Davis	Davis, Calif., USA
UCI	Univ. of Calif. at Irvine	Irvine, Calif., USA
UCLA	Univ. of Calif. at Los Angeles	Los Angeles, Calif., USA
UCR	Univ. of Calif. at Riverside	Riverside, Calif., USA
UCSB	Univ. of Calif. at Santa Barbara	Santa Barbara, Calif., USA
UCSC	Univ. of Calif. at Santa Cruz	Santa Cruz, Calif., USA
UCSD	Univ. of Calif. at San Diego	La Jolla, Calif., USA
UMAD	Univ. de Madrid	Madrid, Spain
UMD	Univ. of Maryland	College Park, MD, USA
UNM	Univ. of New Mexico	Albuquerque, New Mex., USA
USPS	US Naval Postgraduate School	Monterey, Calif., USA
UTAH	Univ. of Utah	Salt Lake City, Utah, USA
UTRE	University of Utrecht	Utrecht, Netherlands
UTSU	Utsunomiya Univ.	Utsunomiya, Japan
UUPP	Univ. of Uppsala	Uppsala, Sweden
VALE	Univ. de Valencia	Valencia, Spain
VAND	Vanderbilt Univ.	Nashville, Tenn., USA
VASC	Virginia State Coll.	Petersburg, VA, USA
VASS	Vassar College	Poughkeepsie, NY, USA
VICT	Victoria Univ.	Victoria, BC, Canada
VIEN	Inst. for High En. Phys., A. A. S.	Vienna, Austria
VIRG	Univ. of Virginia	Charlottesville, VA, USA
VPI	Virginia Polytechnic Inst.	Blacksburg, VA, USA
WARS	Univ. of Warsaw	Warsaw, Poland
WASH	Univ. of Washington	Seattle, Wash., USA
WIEN	Univ. Wien	Vienna, Austria
WILL	College of William and Mary	Williamsburg, VA, USA
WINR	Warsaw Inst. of Nuclear Research	Warsaw, Poland
WISC	Univ. of Wisconsin	Madison, Wisc., USA
WUPP	Univ. Wuppertal	Wuppertal, Germany
WURZ	Wurzburg Univ.	Wurzburg, Germany
WYOM	Univ. of Wyoming	Laramie, Wyoming, USA
YALE	Yale Univ.	New Haven, Conn., USA
YERE	Yerevan Physics Inst.	Yerevan, Armenia, USSR
YOKO	Yokohama National Univ.	Yokohama, Japan
YORK	York University	Downsview, Ont., Canada
ZURI	Zurich University	Zurich, Switzerland

PARTICLE VOCABULARY

ACHARM	particle with negative charm
ADEL0	antiparticle of DEL(1232P33)0
ADEUT	antideuteron
AD0	charmed meson (C=-1)
AG	silver nucleus
AHE	anti-helium-4 nucleus
AHE3	anti-helium-3 nucleus
AK0	S=-1 K0
AK*(UNSPEC)0	S=-1 neutral K* of unspecified mass
AK*(892)0	
AL	aluminum nucleus
ALAMBDA	antilambda
AN	antineutron
ANNIHIL	pure annihilation final state in nucleon-antinucleon scattering
ANN(1935)0	narrow nucleon-antinucleon state
ANN(1935)+ ANN(1935)-	
ANN(2020)0	very narrow p-pbar resonance
ANN(2200)0	very narrow p-pbar resonance
ANUCLEON	antinucleon
ANUCLEUS	general antinucleus
ANUE	electron antineutrino
ANUMU	muon antineutrino
ANYTHING	
AN(SPECT)	spectator antineutron
AP	antiproton
AP(SPECT)	spectator antiproton
AR	argon nucleus
AR37	argon-37 nucleus
ASIGMA0 ASIGMA+ ASIGMA-	
ASTRANGE	unspecified strangeness +1 particle
AT	anti-tritium nucleus
AU	gold nucleus
AXION	hypothesized light Higgs scalar boson
AXI0 AXI+	
A0	charmed baryon
A1(1100)0 A1(1100)+ A1(1100)-	
A2(1310)0 A2(1310)+ A2(1310)-	
A3(1660)0 A3(1660)+ A3(1660)-	
BARYON	baryon of unspecified charge, S, I, mass
BARYONIUM	mesons that couple predominantly to baryon-antibaryon
BE	beryllium nucleus
BEAUTY	generic name for any particle with naked beauty
B(1235)	B(1235) with unspecified charge
B(1235)0 B(1235)+ B(1235)-	
C	carbon nucleus
CA	calcium nucleus
CD	cadmium nucleus
CENTAURO	new type of final state with 50 or more charged particles, no pi0's

PARTICLE VOCABULARY (CONT'D)

CHARGED	a charged track originating from the primary interaction
CHARGED+	positive charged particle
CHARGED-	negative charged particle
CHARM	charmed particle
CHARMED-BARYON	charmed baryon of unspecified C, S, I, or charge
CHI(UNSPEC)	unspecified radiative decay product of psi(3700)
CHI(UNSPEC)0	unspecified radiative decay product of psi(3700)
CHI(3510)	radiative decay of psi(3700)
CHI(3550)	radiative decay of psi(3700)
CR	chromium nucleus
CU	copper nucleus
C12	carbon-12 nucleus
C*(4.44)	4.44 keV excited state of carbon
DD	diffraction dissociation. To be followed by names of particles which were so-produced, e.g. DD <P PI0>
DELTA(980)0 DELTA(980)+ DELTA(980)-	
DEL0 DEL(1232P33)0	
DEL+ DEL(1232P33)+	
DEL++ DEL(1232P33)++	
DEL- DEL(1232P33)-	
DEL(UNSPEC)0	I=3/2 baryon of unspecified mass
DEL(UNSPEC)++	I=3/2 baryon of unspecified mass
DEUT	deuteron
DIBARYON	S=0 dibaryon resonance of unspecified mass
DIHYPERON	S=-2 dihyperon resonance of unspecified mass
D0	charmed meson
D+	charmed meson
D-	charmed meson
D*(2010)+	charmed meson
D*(2010)-	charmed meson
D(UNSPEC)	unspecified charmed meson
D(1285)	
EPSILON(700)	pi-pi S-wave (near 700 MeV)
ETA	
ETAPRIME	
ETAPRIME/C	recurrence of ETA/C
ETA/C	JP=0- charmonium state
ETA(1080)	
EXOTIC-MESON	cannot be formed of quark-antiquark
EXOTIC-NUCLEON	cannot be formed of qqq
E+	positron
E+S	two or more positrons
E+(S)	one or more positrons
E-	electron
E-S	two or more electrons
E-(S)	one or more electrons
E(1420)	
F	f(1270) meson resonance
FE	iron nucleus

PARTICLE VOCABULARY (CONT'D)

FPRIME		
F1(1540)0	F1(1540)+	F1(1540)-
F+		charmed strange meson
F-		charmed strange meson
GAMMA		
GAMMAS		two or more gammas
GAMMA(S)		one or more gammas
GLUEBALL		
G(1700)0	G(1700)+	G(1700)-
HADRON		single hadron, any charge or mass
HADRONS		two or more hadrons
HADRON+		positive hadron
HADRON-		negative hadron
HADRON(S)		one or more hadrons
HDIBARYON(2130)+		S=-1 dibaryon resonance
HE		helium-4 nucleus
HE3		helium 3
HIGGS		Higgs boson
HNUCLEUS		hypernucleus
HVY-LEPTON		general heavy lepton
HVY-LEPTON0		heavy lepton
H(2040)		I=0, JP=4+ meson resonance
H(990)		
INELASTIC		same as ANYTHING, except elastic excluded
IR		iridium nucleus
JET		jet detected as a whole
JETS		two or more jets, each detected as a whole
JET(S)		one or more jets, each detected as a whole
J/PSI(3100)0		
KAON		one kaon or antikaon of unspecified charge
KAONS		two or more unspecified kaons
KAON(S)		one or more unspecified kaons
KL		K long
KS		K short
K0	K+	
K+(S)		one or more K+
K-		
K-(S)		one or more K-
K*(UNSPEC)		unspecified K*
K*(UNSPEC)0		unspecified K*
K*(UNSPEC)+		unspecified K*
K*(UNSPEC)-		unspecified K*
K*(1430)0	K*(1430)+	K*(1430)-
K*(892)0	K*(892)+	K*(892)-
LAMBDA		
LAMBDA/C+		charmed baryon
LAM(UNSPEC)		I=0, S=-1 baryon resonance
LAM(1330B)		bump at 1330 MeV
LAM(1520D03)		
LEPTON		unspecified lepton

PARTICLE VOCABULARY (CONT'D)

LI6	LI7	lithium nuclei
LONGLIVED		stable under strong or electromagnetic decay; mass and other quantum numbers not specified
MESON		single meson of unspecified type
MESONS		two or more mesons
MESON(S)		one or more mesons
MESON(UNSPEC)0		neutral meson of unspecified mass
MESON(UNSPEC)+		charge+1 meson of unspecified mass
MESON(UNSPEC)-		charge-1 meson of unspecified mass
MESON(2950)		bump seen in p pbar pi-
MG		magnesium nucleus
MM.GE.2		two or more undetected neutral particles
MONOPOLE		magnetic monopole
MUON		any mu+ or mu-
MUONS		two or more muons
MUON(S)		one or more muons
MU+	MU-	
N		neutron
NE		neon nucleus
NEUTRAL		single neutral particle
NEUTRALS		two or more neutral particles
NEUTRAL(S)		one or more neutral particles
NEUTRONS		two or more neutrons
NEUTRON(S)		one or more neutrons
NIT12		nitrogen-12 nucleus
NU		
NUCLEON		
NUCLEONS		two or more unspecified nucleons
NUCLEON(S)		one or more unspecified nucleons
NUCLEUS		general nucleus
NUE		electron neutrino
NUMU		muon neutrino
NUTAU		neutrino associated with tau-
N*5/2(UNSPEC)		I=5/2, Y=1 baryon of unspecified mass and charge
N*(UNSPEC)		S=0 baryon of unspecified mass and isospin
N*(UNSPEC)0		S=0 baryon of unspecified mass and isospin
N*(UNSPEC)+		S=0 baryon of unspecified mass and isospin
N(PRONG)		a collection of reactions with different numbers of prongs, e.g. 0(prong), 2(prong), 4(prong), etc.
N(SPECT)		spectator neutron (not number of spectators)
N(UNSPEC)0		I=1/2, Y=1 baryon of unspecified mass
N(UNSPEC)+		I=1/2, Y=1 baryon of unspecified mass
N(1470B)0	N(1470B)+	
N(1470P11)0	N(1470P11)+	
N(1520B)0	N(1520B)+	
N(1520D13)0	N(1520D13)+	
N(1670D15)0	N(1670D15)+	
N(1700B)0	N(1700B)+	
O		oxygen nucleus

PARTICLE VOCABULARY (CONT'D)

OMEGA	meson resonance
OMEGA-	S=-3 baryon
OMEGA*(UNSPEC)	S=-3 baryon resonance of unspecified isospin and mass
OMEGA*(UNSPEC)-	S=-3 baryon resonance of unspecified mass
P	
PB	lead nucleus
PHI	
PHIPRIME	unspecified recurrence of the phi
PION	one pion of unspecified charge
PIONS	two or more pions
PION(S)	one or more pions
PI0	
PI0S	two or more pi0's
PI0(S)	one or more pi0's
PI+	
PI+S	two or more pi+'s
PI+-	one charged pion
PI+(S)	one or more pi+'s
PI-	
PI-S	two or more pi-'s
PI-(S)	one or more pi-'s
PRONGS	two or more prongs
PRONG(S)	one or more prongs
PROTONS	two or more protons
PROTON(S)	one or more protons
PSI(UNSPEC)	unspecified JP=1- charmonium state
PSI(3685)	
PSI(3770)	
PSI(4415)	
PT	platinum nucleus
P(SPECT)	spectator proton
QUARK	quark of unspecified charge
QUARK(1/3)	quark of charge 1/3
QUARK(2/3)	quark of charge 2/3
Q(1240-1400)0 Q(1240-1400)+ Q(1240-1400)-	
RHOPRIME(1250)0 RHOPRIME(1250)+ RHOPRIME(1250)-	
RHOPRIME(1550)0 RHOPRIME(1550)+ RHOPRIME(1550)-	
RHOPRIME(1600)0 RHOPRIME(1600)+ RHOPRIME(1600)-	
RHO0 RHO+ RHO-	
SI	silicon nucleus
SIGMA0 SIGMA+ SIGMA-	
SIGMA/C(2430)++	charmed baryon
SIG(UNSPEC)0	I=1, Y=0 particle of unspecified mass
SIG(UNSPEC)+	I=1, Y=0 particle of unspecified mass
SIG(UNSPEC)-	I=1, Y=0 particle of unspecified mass
SIG(1385P13)0 SIG(1385P13)+ SIG(1385P13)-	
SIG(1670B)0	I=1, Y=0 bump
SIG(1670B)+	I=1, Y=0 bump
SIG(1670B)-	I=1, Y=0 bump

PARTICLE VOCABULARY (CONT'D)

SN	tin nucleus
STRANGE	unspecified strange particle
STRANGEONIUM	meson whose quark content is dominantly s-sbar, such as the phi
STRANGE(S)	one or more unspecifed strange particles
S+	intermediate scalar boson
S-	intermediate scalar boson
S*(980)	pi-pi or K-Kbar S-wave
S(1935)0 S(1935)+	S(1935)-
T	tritium nucleus
TA	tantalum nucleus
TAU	heavy lepton
TAU+	positive heavy lepton
TAU-	negative heavy lepton
TI	titanium nucleus
TOPONIUM	top-antitop state
TRUTH	generic name for any particle with naked truth
U	uranium nucleus
UNSPEC	particle of unspecified type
UPSI(UNSPEC)	unspecified upsilon particle
UPSI(10020)	
UPSI(9460)	
VEE(S)	one or more unspecified neutral strange particle decays
VMESON	vector meson of unspecified mass and charge
VMESON0	vector meson of unspecified mass
W	intermediate vector boson
WT	tungsten nucleus -- note name is not same as chemical symbol
W0	intermediate vector boson
W+	intermediate vector boson
W-	intermediate vector boson
XI0 XI-	
XI*(UNSPEC)	S=-2 baryon of unspecified mass
XI*(UNSPEC)0	
XI(UNSPEC)	I=1/2, S=-2 baryon of unspecified mass
XI(UNSPEC)0	I=1/2, S=-2 baryon of unspecified mass
XI(UNSPEC)-	I=1/2, S=-2 baryon of unspecified mass
XI(1530P13)0 XI(1530)-	
XI(1820)0 XI(1820)-	
XI(1940)0 XI(1940)-	
X(2830)	JP=0- charmonium state
Y*(UNSPEC)	S=-1 baryon of unspecified isospin and mass
Y*(UNSPEC)0	S=-1 baryon of unspecified isospin and mass
Y*(UNSPEC)+	S=-1 baryon of unspecified isospin and mass
Y*(UNSPEC)-	S=-1 baryon of unspecified isospin and mass
Z0	neutral weak gauge boson
Z*(UNSPEC)0	exotic Y=2 baryon of unspecified mass

BROOKHAVEN AGS BEAMS (Source: N. Baggett, BNL)

Up to 10^{13} protons per pulse are accelerated typically to 28.5 GeV kinetic energy (31 GeV has been obtained). At 28.5 GeV, the period is 2.4 sec for slow extraction (with a 1-sec flattop), or 1.4 sec for fast extraction (used for neutrino beams). Fluxes below are calculated using the 2.4 sec period. Counting rates may be estimated using the nominal beam spill time of 1 sec.

	Beam	Momentum range (GeV/c)	±Δp/p (%)	Production angle (°)	Solid angle (msr)	Beam length (m)	Particles	Flux in thousands per sec per 10^{12} protons on target	→ at (GeV/c)	Comments
↑	B4	1.5-6	3	3	0.2	81	K^+/K^-	270/120	4	Usually 2×10^{12} ppp on target; $\pi/K \sim 3$ in K beam
↑		1.5-9					$\bar{p}$	300		
							π^+/π^-	$4\times10^4/3\times10^4$		
	B2			— same characteristics as B4 above —						To multiparticle spectrometer
Separated	C2, C4	⩽ 1.1	2	10.5	2.6	15	K^+/K^-	140/80	0.75	Usually 2×10^{12} ppp; $\pi/K \sim 10$ in K beam
							$\bar{p}$	2		
							π^+/π^-	8×10^4		
	C6, C8	⩽ 0.8	2.5	5	15	15	K^+/K^-	1000/560	0.75	Usually 2×10^{12} ppp
							$\bar{p}$	14		
↓							π^+/π^-	6×10^5		
↑	A1	5-24	1.7	0	0.3	130	K^+/K^-	700/17	18	To multiparticle spectrometer; 10^{12} ppp
↑							$\bar{p}$	1.5		
							π^+/π^-	$10^4/3000$		
	B1	5-24	1.7	0	0.3	75	K^+/K^-	2500/700	10	Usually 2×10^{12} ppp
Unseparated							$p/\bar{p}$	$1.5\times10^5/200$		
							π^+/π^-	3×10^4		
	C1	5-24	5	0	0.8	61	K^+/K^-	9000/400	16	Usually 2×10^{12} ppp; $\mu/\pi \sim 3\%$ in π beam
							$p/\bar{p}$	$3\times10^6/30$		
							π^+/π^-	$10^5/3\times10^4$		
	A3	⩽ 4	12	0	9.5	8	K^+/K^-	$8\times10^4/4\times10^4$	4	Typically 10^{11} ppp; alternates with A1
↓							$p/\bar{p}$	$2\times10^5/6\times10^3$		
↓							π^+/π^-	$10^6/8\times10^5$		
↑	B5	6-20		4	0.4	2.6	Λ/n	$300/4\times10^5$	6-20	Typically 10^{10} ppp
Neutral							K_S/K_L	$27/2\times10^4$		
↓	U	1.5 (peak)					$\nu/\bar{\nu}$	$10^7/7\times10^6$ per m^2		Typically 9×10^{12} ppp; flux averaged over 0.7 m radius

CERN PS BEAMS [Source: "Experiments at CERN in 1980," Y. Goldschmidt-Clermont (editor)]

South Area — These are test beams. The fluxes are for $\Delta p/p = \pm 1\%$ and 2×10^{11} protons on target. The targets are internal, $2 \times 1 \times 10$ mm^3 of Be. There are auxiliary test facilities d_{31a} and q_{12a} downstream from the d_{31} and q_{12} facilities.

Beam	Momentum (GeV/c)	Particles	Flux	Comments
d_{31}	≤ 10	positive negative	$\geq 10^6$ $\geq 10^5$	Fluxes at 6 GeV/c
b_{16}	≤ 24	neutral charged	5×10^5 10^5	
q_{12}	≤ 4.5	negative e^-	10^5 10^3	Maximum e^- flux at 2 GeV/c
t_5	≤ 1.7	positive negative	3.5×10^5 1.8×10^5	Fluxes at 1.2 GeV/c
t_1	< 1.5	positive negative	10^4 $< 10^4$	

East and South-East Area — These are primary proton beams.

Beam	Momentum (GeV/c)	Particles	Flux	Comments
e_{15}	8-24	p	6×10^{12}	Slow ejection; splits into three branches
e_{18}	≤ 22	p	10^{13}	Fast ejection

East Area — These are counter beams. They are all fed by branches of the e_{15} beam above. The fluxes are for $\Delta p/p = \pm 1\%$ and 10^{12} 24-GeV/c protons on the (external) target; they assume 30% target efficiency (fluxes also depend on the external target used). The first three beams are enriched by electrostatic separation.

Beam	Momentum (GeV/c)	Particles	Flux	Comments
k_{26}	≤ 0.55	K	—	Being constructed
k_{23}	0.5-1.0	$\bar{p}$	5×10^3	Flux at 0.8 GeV/c
k_{24}	≤ 1.5	K^-	$\leq 10^4$	Flux at 1.4 GeV/c
c_{13}	≤ 12 " ≤ 18	p π^+ π^-	3×10^6 6×10^5 2×10^5	Fluxes (design values) at 10 GeV/c; for equipment tests
t_6	≤ 18 " "	p π^+ π^-	5×10^5 5×10^3 2×10^3	Fluxes (design values) at 18 GeV/c; for equipment tests

CERN SPS BEAMS [Source: "Experiments at CERN in 1980," Y. Goldschmidt-Clermont (editor)]

Beams in the North Area

Beam name	Maximum momentum (GeV/c)	Maximum intensity beam for 10^{12} incident protons at 400 GeV/c (based on measured values)	Beam type
H2	400	$5 \times 10^7\ \pi^+$ at 200 GeV/c $1.5 \times 10^7\ \pi^-$ at 200 GeV/c	High-energy hadron beam
H4/E4 or P4	330 (H4) 400/450(P4)	$5 \times 10^7\ \pi^+$ at 200 GeV/c $1.5 \times 10^7\ \pi^-$ at 200 GeV/c $1.5 \times 10^6\ e^\pm$ at 150 GeV/c	High-energy hadron or electron beam or attenuated proton beam for production of N4
N4	<400/450	$1 \times 10^5 n/3 \times 10^{-10}$ sr/10^{11} p	Neutron beam
H6	200	$6 \times 10^7\ \pi^+$ at 150 GeV/c $2.5 \times 10^7\ \pi^-$ at 150 GeV/c	Medium-energy hadron beam
H8/P8	400 (H8) 400/450(P8)	$1.5 \times 10^8\ \pi^+$ at 200 GeV/c $5 \times 10^7\ \pi^-$ at 200 GeV/c	High-energy hadron or attenuated proton beam
M2	280	$2 \times 10^7\ \mu^+$ at 200 GeV/c $6 \times 10^6\ \mu^-$ at 200 GeV/c	High-intensity muon beam
P0	400/450	$\sim 10^{13}$ p at 400/450 GeV/c	High-intensity primary proton beam for production of H10 or E12 beam
H10	400/450	$1.5 \times 10^9\ \pi^+$ at 200 GeV/c $5 \times 10^8\ \pi^-$ at 200 GeV/c	High-energy high-intensity hadron or proton beam
E12	300	$1 \times 10^8\ e^-$ total with energy >100 GeV	Broad-band electron/photon beam

Beams in the West Area

Beam name	Maximum momentum (GeV/c)	Intensity of beam for 10^{12} incident protons at 250 GeV/c (based on measured values)	Beam type
S1	40	$\sim 2 \times 10^5\ K^\pm$ (10-20 GeV/c) $\sim 2 \times 10^5\ \bar{p}$ (20-30 GeV/c)	R.F. separated beam to Omega spectrometer
E1/H1	80/100	$6 \times 10^6\ e^\pm$ at 80 GeV/c $1 \times 10^8\ \pi^+$ at 80 GeV/c $4 \times 10^7\ \pi^-$ at 80 GeV/c	Electron or hadron beam: south branch to Omega spectrometer, north branch to other experiments
P1	250	10^9 - 10^{12} protons	Attenuated proton beam: used to produce Y1+H5
Y1	150	$3 \times 10^3\ \Sigma^\pm$ at 150 GeV/c (for 10^9 incident protons)	Charged hyperon beam
H3	200	$8 \times 10^7\ \pi^+$ at 100 GeV/c $4 \times 10^6\ \pi^-$ at 200 GeV/c	High-energy hadron beam
S3	150	Separated K^+ up to 75 GeV/c Separated K^- up to 110 GeV/c	R.F. separated beam to BEBC bubble chamber
H5 TEST	10 - 70	$\leq 10^6\ \pi^-$	TEST Beam

Beams in the West Area Neutrino Facility

Beam name	Parent momentum (GeV/c)	$\langle E_\nu \rangle$ (GeV)	Intensity of beam and/or event rate for 10^{13} incident protons*)		Beam type
N1	Spectrum up to 450 GeV/c	~ 30	$5.3 \times 10^{10}\ \nu/m^2$ $2.3 \times 10^{10}\ \bar{\nu}/m^2$	2.8 ev/ton .08 ev/ton	Wide band beam+)
N3	+ 275	67	$1.5 \times 10^8\ \nu_\pi$	2.4×10^{-3} ev/ton	Narrow band or dichromatic beam**)
		200	$6.5 \times 10^7\ \nu_K$	3.3×10^{-3} ev/ton	
	- 275	67	$4.7 \times 10^7\ \bar{\nu}_\pi$	2.6×10^{-4} ev/ton	
		200	$8.3 \times 10^5\ \bar{\nu}_K$	1.4×10^{-5} ev/ton	
	+ 200	53	$7.6 \times 10^8\ \nu_\pi$	1.0×10^{-2} ev/ton	
		160	$1.4 \times 10^8\ \nu_K$	5.4×10^{-3} ev/ton	
	- 200	53	$2.7 \times 10^8\ \bar{\nu}_\pi$	1.2×10^{-3} ev/ton	
		160	$8.1 \times 10^6\ \bar{\nu}_K$	1.1×10^{-4} ev/ton	
	+ 140	41	$1.6 \times 10^9\ \nu_\pi$	1.6×10^{-2} ev/ton	
		120	$1.8 \times 10^8\ \nu_K$	5.4×10^{-3} ev/ton	
	- 140	41	$8.0 \times 10^8\ \bar{\nu}_\pi$	2.7×10^{-3} ev/ton	
		120	$2.4 \times 10^7\ \bar{\nu}_K$	2.4×10^{-4} ev/ton	
	+ 60	22	$1.6 \times 10^9\ \nu_\pi$	8.6×10^{-3} ev/ton	
		56	$1.1 \times 10^8\ \nu_K$	1.5×10^{-3} ev/ton	
	- 60	22	$1.5 \times 10^9\ \bar{\nu}_\pi$	2.7×10^{-3} ev/ton	
		56	$6.8 \times 10^7\ \bar{\nu}_K$	3.1×10^{-4} ev/ton	

*) 450 GeV for N1, 400 GeV for N3.

**) The beam is defined as that flux falling inside a circle of diameter 1.5 m at the position of BEBC.

+) Flux averaged over a circle of 2 m diameter at BEBC position.

FERMILAB BEAMS (Source: H.B. White, Jr., FNAL)

Protons are accelerated to a maximum momentum of 500 GeV/c. The maximum intensity is 3×10^{13} protons per pulse. The repetition rate is 0.1/sec. Counting rates may be estimated using the nominal beam spill time of 1 sec.

Beam	Momentum range (GeV/c)	±Δp/p (%)	Production angle (mr)	Solid angle (μsr)	Particles	Flux in thousands per sec per 10^{12} protons on target	→ at (GeV/c)	Comments
p west p center p east	50-500				p	< 2×10^{13} per pulse		Note that flux units are different here
ITA	8-350				p			Internal primary protons, gas jet targets
M1E, W	20-400	0.1-1.5	0-7	2	π^-	1000 (at 3.5 mr)	200	Medium resolution beam
M2	20-400	0.1-1.4	0-1.5	0.2	p	3000 (at 0.6 mr)	200	Diffracted protons available at 400 GeV/c with flux < 3×10^{12} per pulse
					π^-	300		
M4	35-200	6	7-8	1	K^-	60	75	
					π^-	100		
M6E, W	20-400	0.1-1.0	0-7	1.3	π^-	1000 (at 2.5 mr)	200	E to single-arm spectrometer, W to multiparticle spectrometer
N1	50-275	2	0-1	4-16	μ^+	150	225	To muon/hadron spectrometer
	100-275				π^+	> 1000		
N3	50-360	0.5-3.0	3-15	4	hadrons	1000	100	To 30" b.c. and hybrid spectrometer
N5	50-500	0.1-2.0	3-15	4	hadrons	1000	100	To laboratory E
P2	40-300	2.3	0-2	1.2	e^-	1000	200	p-east beam; also gives tagged γ's
P3	20-250	7	0-8	8	π^-	10^5	200	p-west secondary beam
	20-300	5	0		$\bar{p}$	1000	100	
P4	20-350				Σ^-	2000	300	p-center beam charged hyperons
M3	300 (peak)		0.3-1.1	~ 10^{-4}	n	200/cm^2	total	
					K^0_L	5000		
P1	300 (peak)		0	0.04	n	4000	> 100	p-east beam; also gives tagged γ's
Following are neutrino beams, for the 15' bubble chamber or general use. Spectra depend on tuning, and the rates depend on the detector location. See the technical memos cited in the comments for more information.								
N0-H	broad band		0	2800	$\nu/\bar{\nu}$	variable		Fast spill only; horn focus; see TM-824
N0-D	100-300	9	0	11.5	$\nu/\bar{\nu}$	variable		Narrow band, sign selected; see TM-661
N0-T	broad band	2-30	0	4-16	$\nu/\bar{\nu}$	variable		Broad band, quadrupole focus; see TM-469, TM-839, and FN-292

KEK BEAMS (Source: A. Kusumegi, KEK)

Protons are accelerated to a maximum momentum of 13 GeV/c. The maximum intensity is 2.5×10^{12} protons per pulse. The repetition rate is 0.45/sec.

Beam	Momentum range (GeV/c)	$\pm\Delta p/p$ (%)	Production angle (°)	Solid angle (msr)	Beam length (m)	Particles	Typical flux in particles per pulse	at (GeV/c)	Comments
EP1	4-13					p	5×10^{10}		Fast extraction; feeds the K1 beam
EP2	4-13					p	2×10^{12}		Slow extraction; branches feed the K2, K3, and π-μ beams
π1	4-8	2	1.5	0.33	33	π^+/π^-	$2\times10^6/6\times10^5$	8	Under construction; fluxes estimated
π2	2-4.3	1	10	0.594	31.3	$p/\bar{p}$	$10^4/10^2$	3	Internal target beam; fluxes for 10^{11} ppp
						π^+/π^-	$2\times10^5/1\times10^5$		
T1	0.5-2.3	2	23	0.16	18.8	π^+/π^-	$5\times10^4/4\times10^3$	1	Internal target beam; fluxes for 10^{11} ppp
K1	2-3.5	0.5	2.8	0.039	84.9	K^+/K^-	30/15	3	To bubble chamber
	2-8					p	400		
	2-4					$\bar{p}$	30		
	2-4					π^+	400		
	2-6					π^-	300		
K2	1-2	3	0	1.02	27.9	K^+/K^-	$1.5\times10^5/5.7\times10^4$	2	
						$p/\bar{p}$	$2\times10^7/1.2\times10^4$		
						π^+/π^-	$1.7\times10^7/1.4\times10^7$		
K3-S	0.5-1.0	2	0	7.3	14.4	K^+/K^-	$4.2\times10^4/1.0\times10^4$	0.6	Fluxes are for the S (short) mode of operation
(K3-L)	"	"	"	(3.0)	(16.5)	$p/\bar{p}$	$7\times10^7/3.5\times10^2$	0.8	
						π^+/π^-	$5\times10^7/5\times10^7$	0.8	
π-μ	0.1-0.45		87	20		$\pi^\pm$	10^6	0.15	
						$\mu^\pm$	10^4		

SERPUKHOV BEAMS (Source: Yu. G. Ryabov and V.V. Ezhela, SERP)

Protons are accelerated to a maximum momentum of 70 GeV/c. The intensity is about 3×10^{12} protons per pulse. The repetition rate is 0.2/sec, and the beam spill time is about 2 sec.

Beam	Momentum range (GeV/c)	$\pm\Delta p/p$ (%)	Production angle (mr)	Solid angle (μsr)	Beam length (m)	Particles	Typical flux in particles per pulse	→ at (GeV/c)	Comments
2/14	30-70	1	6-35	10	120	hadrons+	10^6	60	Internal target lines 2A, 2B, 14
	30-60	1	0-5	30		hadrons-	10^6	60	
	5-45	3	0-7	30		e^-	10^6	30	May be used for polarized γ's
4	20-50	1	0-5	40	130	hadrons-	6×10^6	40	Internal target lines 4A, 4B, 4V, 4L, 4E
18	3-17	2	0-200	120	50	hadrons+	10^8	5	Internal target, injection in ring
	2-14	2	240-400	80		hadrons-	10^4	8	
20	0.4-3.2	1	0	2800	20	hadrons±	10^8	1	External target, fast ejection
19	70		0			p	10^{12}	70	Slow ejection
4N	⩽70		12	1	40	neutrals	10^7	total	Internal target
7	30-70	0.25	11.5	1-4	511.5	p	10^6	69	Internal target, unseparated
	20-50	0.25	0	40		π^+, $K^\pm$, $\bar{p}$	5-10		Fast ejection, separated
	20-55	0.25	0	10		π^-	5-10		Fast ejection, unseparated
9	< 25	0.5	0	30	194	$\pi^\pm$, $K^\pm$, $\bar{p}$, d	5		Fast ejection, separated
	10-13	1	0	30		$\bar{d}$	0.8	12.2	Separated
8	< 40 (mean = 6)		0	2500	500	ν, $\bar{\nu}$	5×10^9	total	Wide-band neutrino beam

SLAC BEAMS (Source: T. Fieguth, SLAC)

Accelerator mode	Particles	Momenta (GeV/c)	Particles per pulse	Pulse length (μs)	Repetition rate (Hz)	Comments
Normal	e^-	≤ 23.5	$\leq 5 \times 10^{11}$	1.6	≤ 360	To conserve power, repetition rates rarely exceed 180 Hz. The e^+ beam would require reinstallation of a high-power source.
	e^+	≤ 15.0	$\leq 2 \times 10^{10}$	1.6	≤ 90	
SLED	e^-	≤ 33.5	10^{11}	0.2	≤ 360	

Colliding beams	Particles	C.m. energy (GeV)	Peak luminosity (cm^{-2} sec^{-1})	Average luminosity (cm^{-2} sec^{-1})	Comments
SPEAR	e^+e^-	2-7.4	2×10^{31} at 3.2 GeV	8×10^{30}	SPEAR has 2 interaction regions, PEP 6. At PEP, the luminosity scales as E^{-2} (E^{-3}) for c.m. energies below (above) that at the peak.
PEP	e^+e^-	8-36	7×10^{30} at 29 GeV	3×10^{30}	

Beam	Momentum range (GeV/c)	$\pm\Delta p/p$ (%)	Production angle (°)	Solid angle (msr)	Particles	Maximum particles → at (GeV/c) per pulse	Repetition rate (Hz)	Facility	Comments
21	1-16	≤ 4.0	1	0.03	K^+/K^-	17/8	10	≤ 180	LASS	Separated: $\pi/K \approx 1/30$
					$p/\bar{p}$	40/6				$\pi/\bar{p} \approx 1/14$
					π^+/π^-	10^3				
					e^-	10^4				
	1-8				e^+	10^4	2.5			
27	20	9.0 FWHM	0	10^{-7}	γ	10^2	20	≤ 20.	40" b.c. hybrid facility	Backscattered laser beam
3	≤ 15	0.1-1.0			e^+	2×10^{10}	All	≤ 90	ESA	e^+ beam requires high power source; all fluxes at $\Delta p/p = \pm 0.25\%$
	≤ 23.5	0.1-1.0			e^-	5×10^{11}	All	≤ 360	1.6, 8, and 20 GeV/c spectrometers	
	$3.237\,j$ ($j = 1, \cdots, 6$)	0.1-1.0			e^-	5×10^{11}		120, 180		← High intensity source; longitudinal polarization = 0.4
	$3.237\,j$ ($j = 1, \cdots, 6$)	≥ 0.5			e^-	10^9		≤ 360		← Low intensity source; longitudinal polarization = 0.85
	≤ 21.5	Brems.	0		γ	4×10^9 EQ	20	≤ 360		← 0° bremsstrahlung
	5-15	7-10	0		γ	5×10^7 EQ	All	≤ 360		← Coherent bremsstrahlung, linearly polarized (10^9 EQ without collimation)
	≤ 21.5	Brems.	0		γ	2×10^8 EQ		≤ 360		← Linearly polarized at maximum energy by coherent pair production in graphite
6	0.1-16	≤ 2.0	1.6-6	0.03	e^-	10		≤ 60	Test beam	
	1-16				π^-	10				
19	1-16	0.25	0		e^+	10	10	≤ 60	Test beam	Very pure; $\sigma_x = 1$ mm

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