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COMPILATION OF CURRENT HIGH ENERGY PHYSICS EXPERIMENTS

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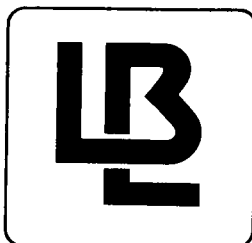
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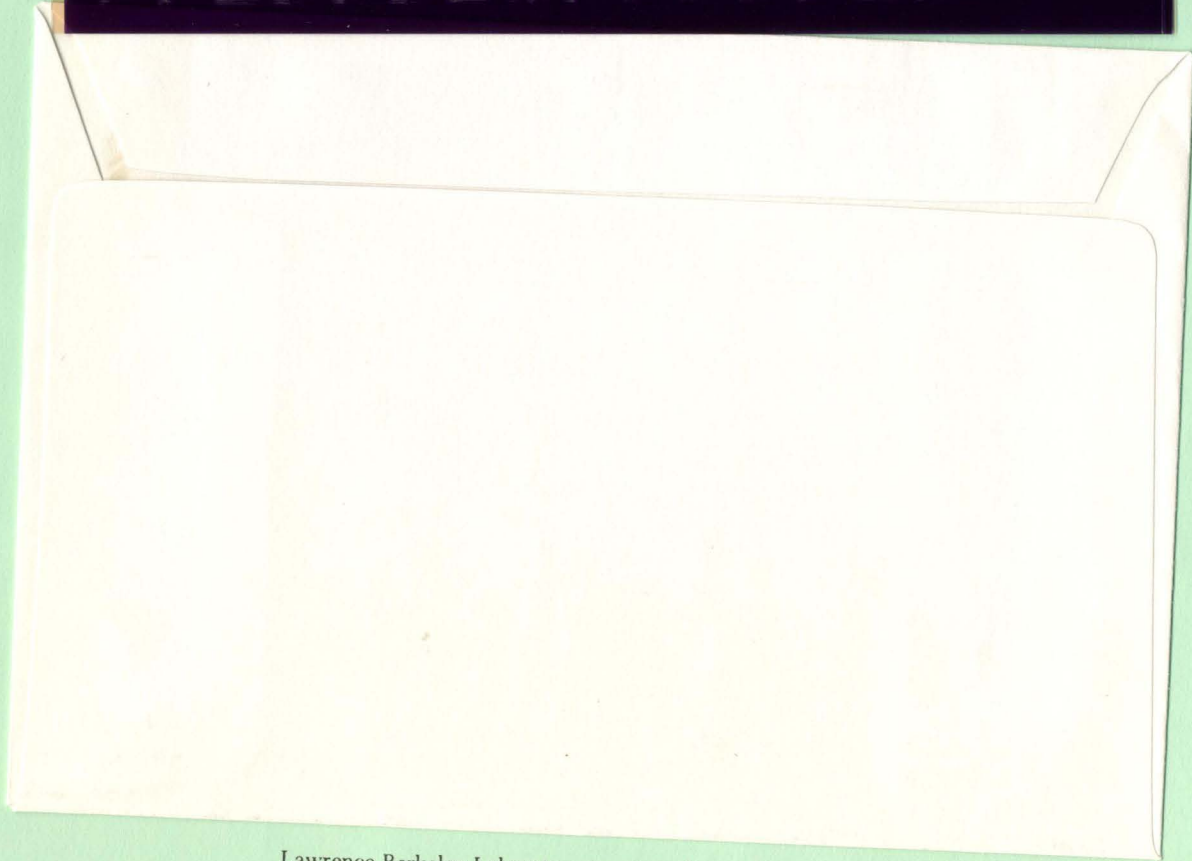


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COMPILATION OF CURRENT HIGH ENERGY PHYSICS EXPERIMENTS
LISTINGS ARE ORDERED ALPHANUMERICALLY BY EXPT. NO.

LBL-91
MAY 1981



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LBL-91 Revised
May 1981

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of all high energy physics experiments at the above laboratories that (1) were approved (and not subsequently withdrawn) before about April 1981, and (2) had not completed taking of data by 1 January 1977.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

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

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

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

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

ACCELERATOR=ANL; DETECTOR=DAS

ACCELERATOR AND DETECTOR (SEE VOCABULARIES).

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.

ADDITIONAL INFORMATION.

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

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

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)
 P N --> N LAMBDA K+ ''
 P N --> P LAMBDA KO ''

CS, ANGP, ANG, POL, ASYM
 ''
 ''

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).

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

<EXPERIMENTAL COMMENT> RAN FOR 205 SHIFTS. THE LAMBDA KO 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.OHANESSIONIAN, P.M.PATEL
 OSU -- N.R.STANTON
 TNT0 -- J.BEAUFAYS, J.A.DANKOWYCH, A.J.PAWLICKI, J.D.PRENTICE, T.S.YOON(SPOKESPERSON)

ACCELERATOR=ANL; DETECTOR=SPEC

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

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

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

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

BEAM-TARGET-MOMENTUM INDEX

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)	EXPERIMENT	BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)	EXPERIMENT
GAMMA P	<1.3	INS-13-2	NUMU P	3.0	BNL-693
GAMMA P	<1.3	INS-15-2	NUMU P	4.0	BNL-639
GAMMA P	<200.0	CERN-NA-014	NUMU P	10.0	BNL-639
GAMMA P	0.6	INS-15-1	NUMU P	28.0	FNAL-388
GAMMA P	0.8	INS-14-1	NUMU P	35.0	FNAL-388
GAMMA P	0.8	INS-15-4	NUMU P	50.0	FNAL-380
GAMMA P	0.9	INS-14-3	NUMU P	91.0	FNAL-388
GAMMA P	3.0	DESY-115	NUMU P	131.0	FNAL-388
GAMMA P	3.0	DESY-142	NUMU N	0.	BNL-704
GAMMA P	3.0	DESY-145	NUMU N	0.	BNL-706
GAMMA P	4.0	DESY-094	NUMU N	0.	ANL-E-412
GAMMA P	5.5	DESY-136	NUMU N	0.	BNL-427
GAMMA P	10.0	CERN-WA-004	NUMU N	0.	BNL-737
GAMMA P	10.0	CERN-WA-004	NUMU N	0.	BNL-734
GAMMA P	20.0	SLAC-BC-072	NUMU N	0.	FNAL-545
GAMMA P	20.0	SLAC-BC-073	NUMU N	0.	FNAL-594
GAMMA P	20.0	FNAL-152B	NUMU N	0.	CERN-WA-025
GAMMA P	20.0	CERN-WA-057	NUMU N	0.	FNAL-310
GAMMA P	20.0	FNAL-612	NUMU N	1.0	BNL-639
GAMMA P	20.0	FNAL-516	NUMU N	2.0	BNL-693
GAMMA P	70.0	CERN-NA-024	NUMU N	2.0	SERP-E-045
GAMMA P	>100.0	INS-14-4	NUMU N	3.0	BNL-693
GAMMA N	0.4	INS-12-1	NUMU N	4.0	BNL-639
GAMMA N	0.7	DESY-129	NUMU N	10.0	BNL-639
GAMMA N	3.4	CERN-NA-001	NUMU NUCLEON	0.	FNAL-545
GAMMA NUCLEON	10.0	INS-16-1	NUMU DEUT	0.	BNL-427
GAMMA DEUT	0.3	INS-15-3	NUMU DEUT	0.	BNL-737
GAMMA DEUT	0.4	INS-13-1	NUMU DEUT	0.	CERN-WA-001
GAMMA DEUT	0.4	INS-16-3	NUMU DEUT	0.	CERN-WA-025
GAMMA BE	0.3	FNAL-401	NUMU C12	0.	BNL-704
GAMMA BE	40.0	CERN-WA-004	NUMU NE	0.	FNAL-053A
GAMMA NUCLEUS	?	FNAL-458	NUMU NE	28.0	FNAL-388
GAMMA NUCLEUS	0.	INS-16-2	NUMU NE	35.0	FNAL-388
GAMMA NUCLEUS	0.2	INS-14-2	NUMU NE	50.0	FNAL-380
GAMMA NUCLEUS	0.4	INS-15-3	NUMU NE	91.0	FNAL-388
GAMMA NUCLEUS	0.4	INS-15-4	NUMU NE	131.0	FNAL-388
GAMMA NUCLEUS	0.8	CERN-NA-001	NUMU AL	2.0	SERP-E-045
GAMMA NUCLEUS	10.0	FNAL-152B	NUMU FE	0.	CERN-WA-001
GAMMA NUCLEUS	20.0	CERN-WA-034	NUMU FE	<1000.0	FNAL-634
GAMMA NUCLEUS	20.0	CERN-WA-045	NUMU FE	2.0	SERP-E-045
GAMMA NUCLEUS	20.0	CERN-WA-058	NUMU PB	0.	CERN-WA-044
GAMMA NUCLEUS	20.0	FNAL-087A	NUMU PB	0.	FNAL-310
GAMMA NUCLEUS	100.0	FNAL-087A	NUMU PB	0.	FNAL-546
			NUMU NUCLEUS	?	CERN-PS-167
			NUMU NUCLEUS	0.	CERN-PS-168
			NUMU NUCLEUS	0.	CERN-WA-014
			NUMU NUCLEUS	0.	CERN-WA-017
			NUMU NUCLEUS	0.	FNAL-536
			NUMU NUCLEUS	0.	FNAL-545
			NUMU NUCLEUS	0.	FNAL-594
			NUMU NUCLEUS	0.	CERN-WA-016
			NUMU NUCLEUS	0.	CERN-WA-018
			NUMU NUCLEUS	0.5	CERN-PS-181
			NUMU NUCLEUS	0.5	CERN-PS-180
			NUMU NUCLEUS	5.0	SERP-E-111
			NUMU NUCLEUS	10.0	SERP-E-107
			NUMU NUCLEUS	10.0	CERN-WA-059
			NUMU NUCLEUS	10.0	FNAL-531
			NUMU NUCLEUS	10.0	FNAL-564
			NUMU NUCLEUS	10.0	CERN-WA-047
			NUMU NUCLEUS	10.0	FNAL-636
			NUMU NUCLEUS	20.0	FNAL-652
			NUMU NUCLEUS	25.0	CERN-WA-022
			NUMU NUCLEUS	25.0	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	CERN-PS-169
			ANUMU E-	0.	BNL-734
			ANUMU E-	0.	FNAL-180
			ANUMU E-	0.	FNAL-594
			ANUMU E-	0.	CERN-WA-018
			ANUMU E-	0.	FNAL-310
			ANUMU E-	0.	BNL-639
			ANUMU E-	4.0	BNL-639
			ANUMU E-	10.0	BNL-639
			ANUMU E-	10.0	FNAL-253
			ANUMU P	0.	BNL-734
			ANUMU P	0.	FNAL-031A
			ANUMU P	0.	CERN-WA-021
			ANUMU P	0.	CERN-WA-024
			ANUMU P	0.	FNAL-180
			ANUMU P	0.	FNAL-594
			ANUMU P	0.	CERN-WA-001
			ANUMU P	0.	CERN-WA-025
			ANUMU P	0.	FNAL-310
			ANUMU P	1.0	BNL-639
			ANUMU P	2.0	SERP-E-045
			ANUMU P	4.0	BNL-639

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-TARGET-MOMENTUM INDEX

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT	BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
ANUMU P	10.0		BNL-639	E+ E-	?		SLAC-SP-031
ANUMU P	28.0	43.0	FNAL-388	E+ E-	1.1	1.3	DESY-119
ANUMU P	35.0	64.0	FNAL-388	E+ E-	1.5	3.0	SLAC-SP-028
ANUMU P	50.0	150.0	FNAL-380	E+ E-	1.5	4.0	SLAC-SP-029
ANUMU P	91.0	95.0	FNAL-388	E+ E-	1.5	4.2	SLAC-SP-024
ANUMU P	131.0	143.0	FNAL-388	E+ E-	1.5	4.2	SLAC-SP-030
ANUMU N	0.	12.0	BNL-734	E+ E-	1.5	4.3	DESY-144
ANUMU N	0.	200.0	FNAL-180	E+ E-	1.6		DESY-119
ANUMU N	0.	260.0	CERN-WA-025	E+ E-	>1.6		DESY-138
ANUMU N	0.	400.0	FNAL-310	E+ E-	1.8	2.5	DESY-143
ANUMU N	1.0	8.0	BNL-639	E+ E-	1.8		DESY-143
ANUMU N	4.0		BNL-639	E+ E-	1.9	2.5	DESY-139
ANUMU N	10.0		BNL-639	E+ E-	1.9	2.3	DESY-140
ANUMU DEUT	0.	100.0	FNAL-390	E+ E-	3.7	5.8	DESY-LENA
ANUMU DEUT	0.	260.0	CERN-WA-001	E+ E-	4.0	5.0	DESY-146
ANUMU DEUT	0.	260.0	CERN-WA-025	E+ E-	4.0	18.0	SLAC-PEP-002
ANUMU NE	0.	200.0	FNAL-180	E+ E-	4.0	18.0	SLAC-PEP-004
ANUMU NE	28.0	43.0	FNAL-388	E+ E-	4.0	18.0	SLAC-PEP-005
ANUMU NE	35.0	64.0	FNAL-388	E+ E-	4.0	18.0	SLAC-PEP-006
ANUMU NE	50.0	150.0	FNAL-380	E+ E-	4.0	18.0	SLAC-PEP-009
ANUMU NE	91.0	95.0	FNAL-388	E+ E-	4.0	18.0	SLAC-PEP-012
ANUMU NE	131.0	143.0	FNAL-388	E+ E-	4.0	18.0	SLAC-PEP-014
ANUMU AL	2.0	30.0	SERP-E-045	E+ E-	4.0	18.0	SLAC-PEP-018
ANUMU FE	0.	260.0	CERN-WA-001	E+ E-	4.0	18.0	SLAC-PEP-020
ANUMU FE	0.	260.0	CERN-WA-018	E+ E-	4.5	5.8	DESY-ARGUS
ANUMU FE	<1000.0		FNAL-634	E+ E-	4.7	5.1	DESY-147
ANUMU FE	2.0	30.0	SERP-E-045	E+ E-	5.0	20.0	DESY-PETRA-CELLO
ANUMU NUCLEUS	?		FNAL-546	E+ E-	5.0	20.0	DESY-PETRA-JADE
ANUMU NUCLEUS	0.	6.0	CERN-PS-167	E+ E-	5.0	20.0	DESY-PETRA-MARKJ
ANUMU NUCLEUS	0.	6.0	CERN-PS-168	E+ E-	5.0	20.0	DESY-PETRA-PLUTO
ANUMU NUCLEUS	0.	200.0	FNAL-536	E+ E-	5.0	20.0	DESY-PETRA-PLU-2
ANUMU NUCLEUS	0.	230.0	FNAL-594	E+ E-	5.0	20.0	DESY-PETRA-TASSO
ANUMU NUCLEUS	0.	260.0	CERN-WA-018				
ANUMU NUCLEUS	5.0	20.0	SERP-E-111	E+	5.0	20.0	CERN-WA-064
ANUMU NUCLEUS	10.0	20.0	SERP-E-107	MU- P	100.0	250.0	CERN-WA-002
ANUMU NUCLEUS	10.0	100.0	CERN-WA-059	MU- P	100.0	250.0	CERN-WA-009
ANUMU NUCLEUS	10.0	100.0	FNAL-531	MU- HE	0.		BNL-745
ANUMU NUCLEUS	10.0	100.0	FNAL-564	MU- BE	150.0		FNAL-448
ANUMU NUCLEUS	10.0	200.0	CERN-WA-047	MU- CU	150.0		FNAL-448
ANUMU NUCLEUS	20.0	600.0	FNAL-652	MU- PB	150.0		FNAL-448
ANUMU NUCLEUS	25.0	250.0	FNAL-616	MU- NUCLEUS	100.0	250.0	CERN-WA-004
ANUMU NUCLEUS	>60.0		FNAL-553	MU+ AL	0.1		BNL-754
ANUMU NUCLEUS	>100.0		FNAL-482	MU+ FE	?		FNAL-203A
ANUMU NUCLEUS	200.0		CERN-WA-019	MU+ FE	225.0		FNAL-391
ANUMU	?		FNAL-356	PION E-	300.0		CERN-WA-007
NUTAU NUCLEUS	10.0	250.0	FNAL-636	PION NUCLEUS	?		CERN-WA-019
E- P	?		SLAC-E-122	PI+ PI-	5.7E-02	8.2	ANL-E-400
E- P	?		SLAC-E-133	PI+ PI-	10.0		SLAC-E-128
E- P	2.5		DESY-137	PI+ P	?		FNAL-236A
E- P	2.6	3.5	DESY-126	PI+ P	1.5	2.6	CERN-PS-160
E- P	2.9	6.7	DESY-114	PI+ P	1.5	2.6	RHEL-193
E- P	3.0		DESY-141	PI+ P	>4.0		BNL-596
E- P	3.7		DESY-137	PI+ P	5.0	20.0	SERP-E-102
E- P	4.7		DESY-137	PI+ P	6.7		SLAC-BC-060
E- P	5.0		DESY-141	PI+ P	8.0		ANL-E-400
E- P	6.0		DESY-125	PI+ P	8.0		ANL-E-436
E- P	6.0		DESY-141	PI+ P	10.0		ANL-716
E- P	6.4		DESY-137	PI+ P	10.0		SLAC-E-128
E- P	6.4	7.0	SLAC-E-130	PI+ P	10.0	15.0	BNL-726
E- P	6.7		DESY-137	PI+ P	10.0	100.0	FNAL-290
E- P	7.0		DESY-141	PI+ P	12.0		SLAC-BC-059
E- P	16.2		SLAC-E-130	PI+ P	13.0		SLAC-BC-061
E- P	22.6		SLAC-E-130	PI+ P	16.0		SLAC-BC-067
E- N	?		SLAC-E-133	PI+ P	16.0		SLAC-E-131
E- DEUT	?		SLAC-E-133	PI+ P	17.0		SLAC-E-123A
E- DEUT	3.0		DESY-141	PI+ P	17.0		SLAC-E-123B
E- DEUT	5.0		DESY-141	PI+ P	20.0		CERN-WA-010
E- DEUT	6.0		DESY-141	PI+ P	20.0	120.0	CERN-WA-056
E- DEUT	6.4		SLAC-E-130	PI+ P	20.0	500.0	FNAL-099
E- DEUT	7.0		DESY-141	PI+ P	20.0	200.0	FNAL-104
E- DEUT	16.2		SLAC-E-130	PI+ P	25.0		FNAL-396
E- DEUT	22.6		SLAC-E-130	PI+ P	30.0		CERN-WA-003
E- HE3	2.0	17.0	SLAC-E-121	PI+ P	40.0		CERN-WA-010
E- HE	2.0	17.0	SLAC-E-121	PI+ P	40.0		FNAL-324
E- BE	3.0		DESY-141	PI+ P	50.0		FNAL-061
E- BE	5.0		DESY-141	PI+ P	50.0		FNAL-110A
E- BE	6.0		DESY-141	PI+ P	50.0	200.0	FNAL-118A
E- BE	7.0		DESY-141	PI+ P	50.0		CERN-WA-006
E- SI	3.0		DESY-141	PI+ P	55.0		CERN-WA-003
E- SI	5.0		DESY-141	PI+ P	80.0		CERN-WA-003
E- SI	6.0		DESY-141	PI+ P	80.0		CERN-WA-009
E- SI	7.0		DESY-141	PI+ P	80.0		CERN-WA-010
E- NUCLEUS	23.0		SLAC-E-137	PI+ P	80.0		FNAL-324
E-	5.0	20.0	CERN-WA-064	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-WA-024
				PI+ P	100.0	300.0	CERN-WA-008
				PI+ P	100.0	350.0	FNAL-258

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.

BEAM-TARGET-MOMENTUM INDEX

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)	EXPERIMENT	BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)	EXPERIMENT	
PI+ P	150.0	FNAL-061	PI- P	21.0	BNL-769	
PI+ P	150.0	FNAL-118A	PI- P	22.0	BNL-747	
PI+ P	160.0	FNAL-324	PI- P	24.0	BNL-b82	
PI+ P	200.0	FNAL-110A	PI- P	25.0	SERP-E-116	
PI+ P	200.0	FNAL-369	PI- P	25.0	40.0	SERP-E-094
PI+ P	200.0	FNAL-395	PI- P	25.0	200.0	FNAL-396
PI+ P	200.0	FNAL-557	PI- P	30.0	CERN-WA-003	
PI+ P	200.0	FNAL-570	PI- P	30.0	140.0	CERN-WA-009
PI+ P	200.0	FNAL-577	PI- P	33.0	SERP-E-142	
PI+ P	200.0	CERN-WA-005	PI- P	40.0	CERN-WA-007	
PI+ P	250.0	CERN-WA-022	PI- P	40.0	CERN-WA-010	
PI+ P	300.0	FNAL-395	PI- P	40.0	FNAL-324	
PI+ P	300.0	FNAL-557	PI- P	40.0	SERP-E-112	
PI+ P	400.0	FNAL-557	PI- P	40.0	SERP-E-116	
PI+ P	400.0	FNAL-609	PI- P	40.0	55.0	SERP-E-135
PI+ N	5.0	SERP-E-102	PI- P	50.0	FNAL-061	
PI+ N	10.0	SLAC-E-128	PI- P	50.0	FNAL-110A	
PI+ N	20.0	CERN-WA-056	PI- P	50.0	200.0	CERN-WA-006
PI+ NUCLEON	10.0	SLAC-E-128	PI- P	55.0	CERN-WA-003	
PI+ DEUT	1.5	KEK-081	PI- P	60.0	CERN-WA-007	
PI+ DEUT	5.0	SERP-E-091*	PI- P	70.0	CERN-WA-030	
PI+ DEUT	10.0	SLAC-E-128	PI- P	80.0	CERN-WA-003	
PI+ DEUT	20.0	FNAL-104	PI- P	80.0	CERN-WA-007	
PI+ DEUT	25.0	FNAL-396	PI- P	80.0	CERN-WA-010	
PI+ DEUT	50.0	FNAL-118A	PI- P	80.0	FNAL-324	
PI+ DEUT	100.0	FNAL-118A	PI- P	85.0	CERN-WA-067	
PI+ DEUT	150.0	FNAL-118A	PI- P	100.0	FNAL-061	
PI+ C	0.2	FNAL-444	PI- P	100.0	FNAL-110A	
PI+ C	200.0	CERN-WA-003	PI- P	100.0	FNAL-350	
PI+ NE	25.0	CERN-WA-051	PI- P	100.0	FNAL-597	
PI+ NE	60.0	CERN-WA-051	PI- P	100.0	200.0	CERN-WA-011
PI+ MG	100.0	FNAL-597	PI- P	100.0	250.0	CERN-WA-024
PI+ TA	5.0	KEK-053	PI- P	100.0	350.0	FNAL-258
PI+ AU	100.0	FNAL-597	PI- P	140.0	CERN-WA-011	
PI+ NUCLEUS	?	BNL-694	PI- P	150.0	FNAL-061	
PI+ NUCLEUS	?	FNAL-379	PI- P	150.0	345.0	CERN-WA-008
PI+ NUCLEUS	1.0	BNL-758	PI- P	160.0	FNAL-324	
PI+ NUCLEUS	20.0	CERN-WA-035	PI- P	175.0	FNAL-663	
PI+ NUCLEUS	40.0	CERN-WA-039	PI- P	200.0	FNAL-110A	
PI+ NUCLEUS	75.0	FNAL-615	PI- P	200.0	FNAL-350	
PI+ NUCLEUS	100.0	FNAL-451	PI- P	200.0	FNAL-369	
PI+ NUCLEUS	100.0	CERN-WA-010	PI- P	200.0	FNAL-557	
PI+ NUCLEUS	100.0	FNAL-258	PI- P	200.0	FNAL-570	
PI+ NUCLEUS	200.0	FNAL-565	PI- P	200.0	FNAL-577	
PI+ NUCLEUS	200.0	FNAL-629	PI- P	200.0	400.0	CERN-WA-005
PI+ NUCLEUS	250.0	CERN-WA-022	PI- P	200.0	FNAL-580	
PI+ NUCLEUS	250.0	FNAL-615	PI- P	225.0	CERN-WA-012	
PI+ P	2.0	CERN-PS-164	PI- P	300.0	FNAL-557	
PI0	?	SERP-E-119	PI- P	300.0	CERN-WA-013	
PI0	?	SERP-E-140	PI- P	350.0	FNAL-384	
PI- P	?	FNAL-236A	PI- P	360.0	FNAL-597	
PI- P	?	SERP-E-134	PI- P	370.0	CERN-WA-016	
PI- P	?	SERP-E-140	PI- P	400.0	FNAL-557	
PI- P	<8.0	KEK-064	PI- NUCLEON	27.0	SERP-E-109	
PI- P	1.0	RHEL-166	PI- NUCLEON	40.0	SERP-E-109	
PI- P	1.1	SERP-E-092	PI- DEUT	<4.3	KEK-083	
PI- P	1.8	KEK-019	PI- DEUT	5.0	20.0	SERP-E-091
PI- P	2.0	KEK-021	PI- DEUT	20.0	500.0	FNAL-104
PI- P	3.5	KEK-063	PI- DEUT	25.0	200.0	FNAL-396
PI- P	4.0	KEK-063	PI- BE	55.0	57.0	SERP-E-117
PI- P	>4.0	BNL-596	PI- BE	200.0	FNAL-326	
PI- P	5.0	CERN-PS-153	PI- BE	200.0	FNAL-567	
PI- P	5.0	CERN-PS-157	PI- BE	225.0	FNAL-610	
PI- P	5.0	SERP-E-091	PI- BE	275.0	FNAL-650	
PI- P	6.0	KEK-006	PI- C	0.2	FNAL-444	
PI- P	6.0	KEK-012	PI- C	16.0	BNL-687	
PI- P	8.0	BNL-715	PI- C	24.0	BNL-687	
PI- P	8.0	BNL-771	PI- C	25.0	BNL-647	
PI- P	8.0	BNL-755	PI- C	40.0	SERP-E-080	
PI- P	8.5	ANL-E-420	PI- C	200.0	CERN-WA-003	
PI- P	8.5	ANL-E-428	PI- C12	25.0	SERP-E-080	
PI- P	10.0	SLAC-E-127	PI- C12	40.0	SERP-E-080	
PI- P	10.0	BNL-726	PI- NE	25.0	CERN-WA-051	
PI- P	10.0	FNAL-290	PI- NE	60.0	CERN-WA-051	
PI- P	12.0	SLAC-E-123A	PI- MG	100.0	FNAL-597	
PI- P	12.0	SLAC-E-123B	PI- MG	360.0	FNAL-597	
PI- P	13.0	BNL-732	PI- AL	40.0	SERP-E-080	
PI- P	13.0	SERP-E-116	PI- CR	300.0	FNAL-525	
PI- P	15.0	SERP-E-074	PI- CU	16.0	BNL-687	
PI- P	16.0	CERN-WA-040	PI- CU	24.0	BNL-687	
PI- P	16.0	SLAC-E-127	PI- CU	25.0	80.0	CERN-WA-012
PI- P	17.0	SLAC-E-123A	PI- CU	27.0	SERP-E-108	
PI- P	17.0	SLAC-E-123B	PI- CU	40.0	SERP-E-080	
PI- P	20.0	BNL-686	PI- CU	40.0	SERP-E-108	
PI- P	20.0	BNL-688	PI- AG	300.0	FNAL-525	
PI- P	20.0	BNL-705	PI- TA	5.0	KEK-053	
PI- P	20.0	CERN-WA-007	PI- WT	16.0	BNL-687	
PI- P	20.0	CERN-WA-010	PI- WT	24.0	BNL-687	
PI- P	20.0	BNL-679	PI- WT	300.0	FNAL-525	
PI- P	20.0	SERP-E-105	PI- AU	100.0	FNAL-597	
PI- P	20.0	FNAL-104	PI- AU	360.0	FNAL-597	

BEAM-TARGET-MOMENTUM INDEX

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)	EXPERIMENT	BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)	EXPERIMENT	
PI- PB	40.0	SERP-E-080	K+ NUCLEUS	0.5	1.0	KEK-052
PI- NUCLEUS	?	BNL-694	K+ NUCLEUS	20.0	150.0	CERN-WA-035
PI- NUCLEUS	?	FNAL-379	K+ NUCLEUS	40.0		CERN-WA-039
PI- NUCLEUS	<4.3	KEK-082	K+ NUCLEUS	70.0		CERN-WA-061
PI- NUCLEUS	1.0	SERP-E-127	K+ NUCLEUS	100.0		FNAL-451
PI- NUCLEUS	20.0	CERN-WA-035	K+ NUCLEUS	250.0		CERN-WA-022
PI- NUCLEUS	25.0	SERP-E-080			<0.5	KEK-089
PI- NUCLEUS	40.0	CERN-WA-039	K+	0.5	0.7	KEK-010
PI- NUCLEUS	40.0	SERP-E-080	K+	2.0	20.0	CERN-PS-164
PI- NUCLEUS	40.0	SERP-E-143	KO	4.0		BNL-735
PI- NUCLEUS	40.0	SERP-E-135	KO	?		BNL-749
PI- NUCLEUS	75.0	FNAL-615	KL E-	?		FNAL-226
PI- NUCLEUS	100.0	CERN-NA-010	KL AL	30.0	150.0	FNAL-486
PI- NUCLEUS	100.0	FNAL-258	KL CU	30.0	150.0	FNAL-486
PI- NUCLEUS	150.0	FNAL-272	KL SN	30.0	150.0	FNAL-486
PI- NUCLEUS	200.0	CERN-NA-017	KL PB	30.0	150.0	FNAL-486
PI- NUCLEUS	200.0	FNAL-490	KL NUCLEUS	?		FNAL-226
PI- NUCLEUS	200.0	FNAL-503	KL	0.	3.0	BNL-696
PI- NUCLEUS	200.0	FNAL-515	KL	1.0	4.0	RHEL-168
PI- NUCLEUS	200.0	FNAL-565	KL	30.0	200.0	FNAL-617
PI- NUCLEUS	250.0	FNAL-615	KL	50.0	150.0	FNAL-533
PI- NUCLEUS	250.0	FNAL-623	K- E-	250.0		FNAL-456
PI- NUCLEUS	300.0	FNAL-272	K- P	?		FNAL-236A
PI- NUCLEUS	300.0	FNAL-481	K- P	0.		BNL-643
PI- NUCLEUS	300.0	FNAL-506	K- P	0.		CERN-PS-165
PI- NUCLEUS	300.0	FNAL-568	K- P	0.		RHEL-181
PI- NUCLEUS	300.0	FNAL-573	K- P	0.4		ANL-E-347
PI- NUCLEUS	300.0	FNAL-574	K- P	0.5	1.1	BNL-691
PI- NUCLEUS	300.0	FNAL-595	K- P	0.7		BNL-702
PI- NUCLEUS	>300.0	CERN-NA-015	K- P	0.7	1.4	RHEL-136
PI- NUCLEUS	340.0	CERN-WA-061	K- P	0.7		BNL-759
PI- NUCLEUS	500.0	CERN-NA-017	K- P	1.2	1.9	RHEL-120
PI-	?	SERP-E-115	K- P	1.3		KEK-034
PI-	2.0	CERN-PS-164	K- P	1.6		KEK-034
OMEGA	?	SERP-E-140	K- P	1.9		KEK-034
PHI	?	SERP-E-140	K- P	2.2		BNL-698
K+ P	?	FNAL-236A	K- P	3.0		BNL-593
K+ P	0.5	BNL-691	K- P	4.0		BNL-673
K+ P	4.0	BNL-596	K- P	4.0	6.0	BNL-596
K+ P	11.0	SLAC-E-135	K- P	4.6		BNL-593
K+ P	12.0	CERN-WA-055	K- P	5.0		BNL-673
K+ P	16.0	CERN-WA-048	K- P	5.0	20.0	SERP-E-091
K+ P	20.0	CERN-WA-010	K- P	6.0		BNL-771
K+ P	20.0	FNAL-104	K- P	6.7		SLAC-BC-060
K+ P	25.0	FNAL-396	K- P	7.0	9.0	SLAC-BC-061
K+ P	32.1	SERP-E-133	K- P	10.0		SLAC-E-127
K+ P	40.0	CERN-WA-010	K- P	11.0		SLAC-E-132
K+ P	40.0	FNAL-324	K- P	11.0		SLAC-E-135
K+ P	50.0	FNAL-110A	K- P	12.0		CERN-WA-049
K+ P	50.0	FNAL-118A	K- P	12.0		SLAC-BC-059
K+ P	50.0	CERN-WA-006	K- P	13.0		SERP-E-116
K+ P	70.0	CERN-WA-027	K- P	16.0		CERN-WA-049
K+ P	80.0	CERN-WA-009	K- P	18.5		CERN-WA-060
K+ P	80.0	CERN-WA-010	K- P	20.0		CERN-WA-007
K+ P	80.0	FNAL-324	K- P	20.0		CERN-WA-010
K+ P	100.0	FNAL-110A	K- P	20.0	150.0	FNAL-383
K+ P	100.0	FNAL-118A	K- P	20.0	500.0	FNAL-104
K+ P	100.0	FNAL-350	K- P	22.0		BNL-747
K+ P	100.0	FNAL-597	K- P	25.0		SERP-E-116
K+ P	150.0	FNAL-118A	K- P	25.0	200.0	FNAL-396
K+ P	160.0	FNAL-324	K- P	30.0		CERN-WA-003
K+ P	200.0	FNAL-110A	K- P	30.0	140.0	CERN-WA-009
K+ P	200.0	FNAL-557	K- P	33.0		SERP-E-142
K+ P	200.0	FNAL-570	K- P	40.0		CERN-WA-007
K+ P	200.0	FNAL-577	K- P	40.0		CERN-WA-010
K+ P	200.0	CERN-NA-005	K- P	40.0		FNAL-324
K+ P	250.0	CERN-NA-022	K- P	40.0		SERP-E-112
K+ P	300.0	FNAL-557	K- P	40.0		SERP-E-116
K+ P	400.0	FNAL-557	K- P	40.0	55.0	SERP-E-135
K+ N	0.7	BNL-641	K- P	50.0		FNAL-110A
K+ N	0.7	RHEL-136	K- P	50.0	200.0	CERN-WA-006
K+ N	1.3	KEK-034	K- P	55.0		CERN-WA-003
K+ N	1.6	KEK-034	K- P	60.0		CERN-WA-007
K+ N	1.9	KEK-034	K- P	70.0		CERN-WA-026
K+ N	5.0	SERP-E-091	K- P	75.0		FNAL-585
K+ N	5.0	SERP-E-102	K- P	80.0		CERN-WA-003
K+ N	6.0	CERN-PS-137	K- P	80.0		CERN-WA-007
K+ N	75.0	FNAL-585	K- P	80.0		CERN-WA-010
K+ N	100.0	FNAL-585	K- P	80.0		FNAL-324
K+ N	150.0	FNAL-585	K- P	100.0		FNAL-110A
K+ DEUT	1.5	KEK-081	K- P	100.0		FNAL-350
K+ DEUT	5.0	SERP-E-091	K- P	100.0		FNAL-585
K+ DEUT	20.0	FNAL-104	K- P	110.0		CERN-WA-028
K+ DEUT	25.0	FNAL-396	K- P	150.0		FNAL-585
K+ DEUT	50.0	FNAL-118A	K- P	160.0		FNAL-324
K+ DEUT	100.0	FNAL-118A	K- P	175.0		FNAL-663
K+ DEUT	150.0	FNAL-118A	K- P	200.0		FNAL-110A
K+ MG	100.0	FNAL-597	K- P	200.0		FNAL-557
K+ AU	100.0	FNAL-597	K- P	200.0		FNAL-577
K+ NUCLEUS	?	BNL-694	K- P	200.0	400.0	CERN-NA-005
K+ NUCLEUS	?	FNAL-379	K- P	300.0		FNAL-557

BEAM-TARGET-MOMENTUM INDEX

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT	BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
K- P	400.0		FNAL-557	P P		11.7	ANL-E-435
K- DEUT	?		BNL-728	P P		11.7	ANL-E-438
K- DEUT	0.		BNL-643	P P		11.7	ANL-E-439
K- DEUT	1.4		CERN-PS-159	P P		11.7	ANL-E-452
K- DEUT	5.0	20.0	SERP-E-091	P P		11.7	ANL-E-458
K- DEUT	20.0	500.0	FNAL-104	P P		12.0	ANL-E-399
K- DEUT	25.0	200.0	FNAL-396	P P		12.0	ANL-E-415
K- HE	0.		BNL-643	P P		12.0	ANL-E-427
K- C	0.2		FNAL-444	P P		12.0	ANL-E-434
K- C	0.8		BNL-692	P P		12.0	ANL-E-441
K- C	0.8		BNL-759	P P		12.0	ANL-E-445
K- O	0.7		BNL-752	P P		12.0	ANL-E-451
K- CA	0.8		BNL-692	P P		12.0	CERN-WA-055
K- IR	6.0		BNL-751	P P		12.7	ANL-E-452
K- NUCLEUS	?		BNL-694	P P		15.0	BNL-748
K- NUCLEUS	?		FNAL-379	P P		20.0	BNL-717
K- NUCLEUS	0.		CERN-PS-152	P P		20.0	BNL-748
K- NUCLEUS	0.		RHEL-113	P P		20.0	CERN-WA-007
K- NUCLEUS	0.5		CERN-PS-166	P P		20.0	CERN-WA-010
K- NUCLEUS	0.5	1.0	KEK-052	P P		20.0	FNAL-104
K- NUCLEUS	0.6		BNL-646	P P		23.0	BNL-748
K- NUCLEUS	0.7		CERN-PS-154	P P		24.0	BNL-717
K- NUCLEUS	0.8		BNL-646	P P		25.0	FNAL-396
K- NUCLEUS	0.8		BNL-746	P P		26.0	BNL-748
K- NUCLEUS	0.8		BNL-760	P P		28.5	BNL-748
K- NUCLEUS	1.0		SERP-E-127	P P		30.0	FNAL-552
K- NUCLEUS	20.0	150.0	CERN-WA-035	P P		30.0	FNAL-313
K- NUCLEUS	25.0		SERP-E-080	P P		40.0	CERN-WA-007
K- NUCLEUS	40.0		CERN-WA-039	P P		40.0	CERN-WA-010
K- NUCLEUS	40.0		SERP-E-080	P P		40.0	FNAL-324
K- NUCLEUS	40.0	55.0	SERP-E-135	P P		50.0	FNAL-061
K- NUCLEUS	70.0		CERN-WA-061	P P		50.0	FNAL-110A
K- NUCLEUS	150.0		FNAL-272	P P		50.0	FNAL-118A
K- NUCLEUS	300.0		FNAL-272	P P		50.0	CERN-WA-006
K-	?		SERP-E-115	P P		50.0	FNAL-522
K-	2.0	20.0	CERN-PS-164	P P		60.0	CERN-WA-007
KAON E-	300.0		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	CERN-WA-024
				P P	250.0	100.0	CERN-WA-008
				P P	300.0	100.0	FNAL-581
				P P	340.0	100.0	FNAL-095A
				P P	500.0	100.0	FNAL-061
				P P		150.0	FNAL-118A
				P P		150.0	FNAL-324
				P P		160.0	FNAL-663
				P P		175.0	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	CERN-WA-005
				P P		212.2	CERN-R-420
				P P		250.0	CERN-WA-022
				P P		250.0	FNAL-118A
				P P		257.0	CERN-R-209
				P P	2047.5	257.0	CERN-R-415
				P P	2047.5	257.0	CERN-R-416
				P P	2047.5	257.0	CERN-R-807
				P P	2047.5	281.0	CERN-R-702
				P P	2114.1	281.0	CERN-R-108
				P P	293.3	293.3	CERN-R-210
				P P	293.3	2094.0	FNAL-395
				P P	300.0	300.0	FNAL-404
				P P	300.0	300.0	FNAL-557
				P P	300.0	>360.0	CERN-WA-023
				P P	400.0	400.0	CERN-WA-016
				P P	400.0	400.0	FNAL-177A
				P P	400.0	400.0	FNAL-404
				P P	400.0	400.0	FNAL-441
				P P	400.0	400.0	FNAL-557
				P P	400.0	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	498.0	CERN-R-108
				P P	1030.7	1030.7	CERN-R-109
				P P	1030.7	1030.7	CERN-R-421
				P P	1068.6	1068.6	CERN-R-108

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.

BEAM-TARGET-MOMENTUM INDEX

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)	EXPERIMENT	BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)	EXPERIMENT	
P P	1440.0	CERN-R-109	P NUCLEUS	29.0	BNL-676	
P P	1440.0	CERN-R-420	P NUCLEUS	40.0	CERN-WA-039	
P P	1441.8	CERN-R-606	P NUCLEUS	50.0	200.0	FNAL-081A
P P	1479.1	CERN-R-108	P NUCLEUS	70.0	SERP-E-120	
P P	2047.5	CERN-R-109	P NUCLEUS	70.0	SERP-E-121	
P P	2047.5	CERN-R-419	P NUCLEUS	70.0	SERP-E-144	
P P	2047.5	CERN-R-421	P NUCLEUS	100.0	CERN-WA-032	
P P	2047.5	CERN-R-608	P NUCLEUS	100.0	FNAL-451	
P P	2074.0	CERN-R-108	P NUCLEUS	100.0	1000.0	FNAL-631
P P	2114.1	CERN-R-420	P NUCLEUS	200.0	FNAL-565	
P P	1.6E+05	CERN-R-703-T	P NUCLEUS	200.0	FNAL-629	
P N	?	KEK-075	P NUCLEUS	200.0	300.0	FNAL-466
P N	1.0	3.0	P NUCLEUS	250.0	CERN-WA-022	
P N	1.0	12.0	P NUCLEUS	300.0	FNAL-505	
P N	1.7	ANL-E-437	P NUCLEUS	400.0	CERN-WA-020	
P N	6.0	ANL-E-427	P NUCLEUS	400.0	CERN-WA-038	
P N	6.0	ANL-E-433	P NUCLEUS	400.0	CERN-WA-052	
P N	8.0	400.0	P NUCLEUS	400.0	CERN-WA-065	
P N	12.0	FNAL-381	P NUCLEUS	400.0	CERN-WA-066	
P N	24.0	ANL-E-427	P NUCLEUS	400.0	FNAL-468	
P N	70.0	CERN-PS-156	P NUCLEUS	400.0	FNAL-495	
P DEUT	1.0	SERP-E-110	P NUCLEUS	400.0	FNAL-499	
P DEUT	1.0	3.0	P NUCLEUS	400.0	FNAL-549	
P DEUT	1.3	12.0	P NUCLEUS	400.0	FNAL-565	
P DEUT	1.7	ANL-E-437	P NUCLEUS	400.0	FNAL-575	
P DEUT	2.3	ANL-E-437	P NUCLEUS	400.0	FNAL-592	
P DEUT	7.0	500.0	P NUCLEUS	400.0	FNAL-596	
P DEUT	8.0	400.0	P NUCLEUS	400.0	FNAL-605	
P DEUT	20.0	FNAL-198A	P NUCLEUS	400.0	FNAL-608	
P DEUT	20.0	500.0	P NUCLEUS	400.0	FNAL-613	
P DEUT	24.0	BNL-717	P NUCLEUS	400.0	450.0	FNAL-622
P DEUT	25.0	200.0	P NUCLEUS	450.0	CERN-WA-068	
P DEUT	30.0	300.0	P NUCLEUS	500.0	FNAL-288	
P DEUT	50.0	FNAL-118A	P NUCLEUS	500.0	FNAL-494	
P DEUT	70.0	SERP-E-100	P NUCLEUS	500.0	FNAL-508	
P DEUT	100.0	FNAL-118A	P NUCLEUS	500.0	FNAL-576	
P DEUT	150.0	FNAL-118A	P	2.0	20.0	CERN-PS-164
P DEUT	250.0	FNAL-118A	N P	0.	400.0	CERN-WA-006
P DEUT	517.2	CERN-R-417	N P	2.0	ANL-E-425	
P DEUT	722.0	CERN-R-417	N P	3.0	ANL-E-425	
P DEUT	1025.8	CERN-R-417	N P	6.0	ANL-E-425	
P HE	6.0	ANL-E-351	N P	6.0	ANL-E-444	
P HE	8.0	500.0	N P	10.0	28.0	BNL-766-I
P HE	480.8	CERN-R-418	N P	25.0	200.0	FNAL-396
P HE	989.9	CERN-R-418	N DEUT	25.0	200.0	FNAL-396
P BE	28.0	BNL-744	N BE	30.0	300.0	FNAL-438
P BE	70.0	SERP-E-101	N C	30.0	300.0	FNAL-438
P BE	400.0	CERN-WA-020	N C	45.0	SERP-E-104	
P BE	400.0	FNAL-326	N AL	30.0	300.0	FNAL-438
P BE	400.0	FNAL-400	N FE	30.0	300.0	FNAL-438
P BE	400.0	FNAL-469	N CU	30.0	300.0	FNAL-438
P BE	400.0	FNAL-555	N CD	30.0	300.0	FNAL-438
P C	0.2	FNAL-444	N WT	30.0	300.0	FNAL-438
P C	200.0	FNAL-369	N PB	30.0	300.0	FNAL-438
P C	400.0	FNAL-547	N U	30.0	300.0	FNAL-438
P NE	400.0	FNAL-291	N NUCLEUS	40.0	60.0	SERP-E-146
P MG	100.0	FNAL-597	N NUCLEUS	300.0	FNAL-540	
P AL	400.0	FNAL-547	N NUCLEUS	300.0	FNAL-630	
P CR	500.0	FNAL-524	AN P	0.1	0.5	BNL-767
P FE	70.0	SERP-E-114	AN NUCLEUS	0.	1.0	CERN-PS-179
P FE	400.0	FNAL-439	AP P	?	FNAL-236A	
P CU	70.0	SERP-E-101	AP P	0.	BNL-643	
P CU	400.0	CERN-WA-041	AP P	0.	CERN-PS-142	
P CU	400.0	CERN-WA-043	AP P	0.	CERN-PS-170	
P CU	400.0	CERN-WA-054	AP P	0.	CERN-PS-171	
P AG	500.0	FNAL-524	AP P	0.	CERN-PS-174	
P TA	5.0	KEK-053	AP P	0.	CERN-PS-175	
P WT	28.0	BNL-720	AP P	0.	0.5	BNL-708
P WT	30.0	BNL-719	AP P	0.	0.5	CERN-PS-161
P WT	500.0	FNAL-524	AP P	0.	0.6	ANL-E-366
P PT	28.3	BNL-721	AP P	0.	1.0	CERN-PS-179
P AU	100.0	FNAL-597	AP P	0.	2.0	CERN-PS-170
P PB	400.0	FNAL-547	AP P	0.2	0.5	CERN-PS-173
P U	10.0	20.0	AP P	0.2	2.0	CERN-PS-172
P U	12.3	ANL-E-424	AP P	0.3	0.6	CERN-T-250
P U	20.0	CERN-PS-162	AP P	0.3	2.0	CERN-PS-172
P NUCLEUS	?	FNAL-379	AP P	0.3	2.0	CERN-PS-178
P NUCLEUS	<13.0	KEK-082	AP P	0.3	0.5	BNL-762
P NUCLEUS	1.0	SERP-E-127	AP P	0.3	0.6	CERN-T-239
P NUCLEUS	1.0	12.3	AP P	0.4	0.6	BNL-742
P NUCLEUS	>1.0	BNL-739	AP P	0.4	0.9	BNL-730
P NUCLEUS	1.5	BNL-718	AP P	0.4	0.9	BNL-733
P NUCLEUS	4.0	12.0	AP P	0.4	0.9	BNL-738
P NUCLEUS	5.0	16.0	AP P	0.4	1.0	CERN-PS-163-2
P NUCLEUS	10.0	500.0	AP P	0.4	0.7	KEK-033
P NUCLEUS	13.0	KEK-066	AP P	0.5	1.0	KEK-074
P NUCLEUS	15.0	BNL-676	AP P	0.8	1.3	CERN-PS-163-1
P NUCLEUS	20.0	150.0	AP P	1.2	3.0	BNL-644
P NUCLEUS	20.0	400.0	AP P	3.0	5.0	KEK-062
P NUCLEUS	21.0	BNL-676	AP P	3.5	7.5	CERN-R-704
P NUCLEUS	28.0	BNL-718	AP P	4.0	10.0	BNL-596

BEAM-TARGET-MOMENTUM INDEX

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/c)	EXPERIMENT	BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/c)	EXPERIMENT
AP P	4.1	ANL-E-429	AP NUCLEUS	0.	CERN-PS-176
AP P	5.0	CERN-WA-013	AP NUCLEUS	0.	CERN-PS-177
AP P	6.1	SLAC-BC-068	AP NUCLEUS	0.	CERN-PS-161
AP P	7.0	BNL-771	AP NUCLEUS	20.0	CERN-WA-035
AP P	7.9	CERN-WA-029	AP NUCLEUS	40.0	CERN-WA-039
AP P	8.0	BNL-715	AP NUCLEUS	70.0	CERN-WA-061
AP P	8.3	SLAC-E-129	AP NUCLEUS	100.0	FNAL-537
AP P	8.9	SLAC-BC-068	AP NUCLEUS	150.0	FNAL-272
AP P	9.0	SLAC-BC-064	AP NUCLEUS	300.0	FNAL-272
AP P	10.0	SLAC-E-127	AP	2.0	CERN-PS-164
AP P	10.0	BNL-726	LAMBDA P	30.0	SERP-E-120
AP P	12.0	CERN-WA-049	LAMBDA DEUT	30.0	SERP-E-120
AP P	13.0	SERP-E-116	LAMBDA NUCLEUS	80.0	FNAL-619
AP P	13.0	SLAC-E-129	LAMBDA	?	KEK-049
AP P	15.0	CERN-WA-029	LAMBDA	6.0	BNL-597
AP P	16.0	CERN-WA-049	LAMBDA	20.0	SERP-E-120
AP P	20.0	CERN-WA-007	LAMBDA	60.0	FNAL-361
AP P	20.0	CERN-WA-010	LAMBDA	150.0	FNAL-440
AP P	20.0	FNAL-104	LAMBDA	210.0	FNAL-497
AP P	25.0	SERP-E-116	SIGMA+ P	30.0	SERP-E-120
AP P	25.0	FNAL-396	SIGMA+ P	100.0	FNAL-497
AP P	30.0	CERN-WA-009	SIGMA+ DEUT	30.0	SERP-E-120
AP P	32.0	SERP-E-138	SIGMA+	?	KEK-092
AP P	32.1	SERP-E-122	SIGMA+	20.0	SERP-E-120
AP P	40.0	CERN-WA-007	SIGMA+	100.0	CERN-WA-002
AP P	40.0	CERN-WA-010	SIGMA+	120.0	FNAL-620
AP P	40.0	FNAL-324	SIGMA- P	30.0	SERP-E-120
AP P	40.0	SERP-E-116	SIGMA- P	80.0	CERN-WA-042
AP P	50.0	CERN-WA-021	SIGMA- P	100.0	FNAL-497
AP P	50.0	FNAL-110A	SIGMA- DEUT	30.0	SERP-E-120
AP P	60.0	CERN-WA-007	SIGMA- DEUT	80.0	CERN-WA-042
AP P	70.0	CERN-WA-031	SIGMA- BE	135.0	CERN-WA-062
AP P	80.0	CERN-WA-007	SIGMA- NUCLEUS	0.	BNL-723
AP P	80.0	CERN-WA-010	SIGMA- NUCLEUS	1.0	SERP-E-127
AP P	80.0	FNAL-324	SIGMA- NUCLEUS	20.0	FNAL-666
AP P	80.0	CERN-WA-042	SIGMA-	20.0	SERP-E-120
AP P	100.0	CERN-WA-021	SIGMA-	100.0	CERN-WA-002
AP P	100.0	FNAL-110A	SIGMA-	100.0	CERN-WA-046
AP P	100.0	FNAL-350	SIGMA-	120.0	FNAL-620
AP P	100.0	FNAL-597	XIO P	250.0	FNAL-620
AP P	100.0	FNAL-581	XIO DEUT	30.0	SERP-E-120
AP P	160.0	FNAL-324	XIO	30.0	SERP-E-120
AP P	175.0	FNAL-663	XI- P	20.0	SERP-E-120
AP P	200.0	FNAL-110A	XI- P	30.0	SERP-E-120
AP P	200.0	FNAL-557	XI- P	80.0	CERN-WA-042
AP P	200.0	FNAL-570	XI- DEUT	100.0	FNAL-497
AP P	200.0	FNAL-577	XI- DEUT	30.0	SERP-E-120
AP P	200.0	CERN-WA-005	XI- DEUT	80.0	CERN-WA-042
AP P	212.2	CERN-R-420	XI-	20.0	SERP-E-120
AP P	257.0	CERN-R-807	XI-	100.0	CERN-WA-002
AP P	293.3	CERN-R-210	OMEGA- P	120.0	FNAL-620
AP P	300.0	FNAL-557	OMEGA- P	30.0	SERP-E-120
AP P	400.0	FNAL-557	OMEGA- DEUT	20.0	SERP-E-120
AP P	478.7	CERN-R-211	OMEGA-	60.0	CERN-WA-046
AP P	1030.7	CERN-R-421	OMEGA-	100.0	FNAL-620
AP P	1440.0	CERN-R-420	OMEGA-	120.0	FNAL-620
AP P	2047.5	CERN-R-421	DEUT P	1.9	ANL-E-442
AP P	2114.1	CERN-R-420	DEUT P	2.0	KEK-080
AP P	5328.0	CERN-UA-04	DEUT P	2.2	ANL-E-442
AP P	1.6E+05	CERN-R-703-T	DEUT P	2.4	ANL-E-442
AP P	1.6E+05	CERN-UA-01	DEUT P	2.7	ANL-E-442
AP P	1.6E+05	CERN-UA-02	DEUT P	2.7	ANL-E-443
AP P	1.6E+05	CERN-UA-03	DEUT P	3.4	ANL-E-442
AP P	1.6E+05	CERN-UA-05	DEUT P	3.4	ANL-E-443
AP N	0.3	CERN-T-250	DEUT DEUT	517.9	CERN-R-417
AP N	9.0	SLAC-BC-070	DEUT DEUT	722.7	CERN-R-417
AP DEUT	?	CERN-T-250	DEUT DEUT	1026.5	CERN-R-417
AP DEUT	0.	BNL-643	DEUT	5.0	CERN-WA-033
AP DEUT	0.	CERN-PS-174	ADEUT P	12.0	SERP-E-139
AP DEUT	0.	CERN-PS-175	ADEUT DEUT	12.0	SERP-E-139
AP DEUT	0.	CERN-PS-161	ADEUT	5.0	CERN-WA-033
AP DEUT	0.	CERN-PS-179	HE3	5.0	CERN-WA-033
AP DEUT	0.5	BNL-701	AHE3	5.0	CERN-WA-033
AP DEUT	0.8	CERN-PS-163-1	T	5.0	CERN-WA-033
AP DEUT	6.1	SLAC-BC-068	AT	5.0	CERN-WA-033
AP DEUT	8.9	SLAC-BC-068	HE HE	1927.4	CERN-R-418
AP DEUT	12.0	CERN-T-246-248	HE	5.0	CERN-WA-033
AP DEUT	20.0	FNAL-104	AHE	5.0	CERN-WA-033
AP DEUT	25.0	FNAL-396	LONGLIVED	5.0	CERN-WA-033
AP DEUT	80.0	CERN-WA-042	HADRON P	?	CERN-WA-033
AP HE3	0.	CERN-PS-179	HADRON NUCLEUS	?	CERN-NA-003
AP HE	0.	BNL-643	CHARGED+ P	40.0	CERN-NA-018
AP HE	0.	CERN-PS-179	CHARGED+ P	85.0	CERN-WA-063
AP LI6	0.	CERN-PS-158	CHARGED+	10.0	CERN-WA-063
AP LI7	0.	CERN-PS-158	CHARGED+	50.0	FNAL-660
AP NE	0.	CERN-PS-179	CHARGED-	40.0	CERN-WA-063
AP MG	100.0	FNAL-597	CHARGED- P	85.0	CERN-WA-063
AP AR	0.	CERN-PS-179	CHARGED-	10.0	SERP-E-132
AP AU	100.0	FNAL-597	CHARGED-	50.0	FNAL-660
AP NUCLEUS	?	BNL-694	CHARGED	20.0	FNAL-507
AP NUCLEUS	?	FNAL-379	CHARGED	50.0	FNAL-427
			NEUTRAL	?	FNAL-584

SPOKESMAN INDEX

SPOKESMAN	INSTITUTION	EXPERIMENT	SPOKESMAN	INSTITUTION	EXPERIMENT
ADAIR, R.K.	YALE	BNL-676	DEVLIN, T.	RUTG	FNAL-555
ADAIR, R.K.	YALE	BNL-696	DEVLIN, T.	RUTG	FNAL-619
ADAIR, R.K.	YALE	BNL-735	DIAMBRINI-PALAZZI, G.	GENO	CERN-WA-034
ADAIR, R.K.	YALE	BNL-749	DIAMBRINI-PALAZZI, G.	GENO	CERN-WA-058
ALBROW, M.G.	RHEL	CERN-R-807	DIAMBRINI-PALAZZI, G.	GENO	CERN-WA-045
ANDERSON, K.J.	EPI	FNAL-615	DICK, L.	CERN	CERN-PS-156
ANTIPOV, Y.M.	SERP	SERP-E-143	DIEBOLD, R.	ANL	FNAL-099
ARENTON, M.	ANL	ANL-E-458	DOLGOSHEIN, B.A.	MPEI	SERP-E-113
ASTBURY, A.	RHEL	CERN-UA-01	DONALD, R.A.	LIVP	CERN-WA-049
ASTON, D.	SLAC	SLAC-E-135	DORFAN, J.	SLAC	SLAC-PEP-005
AUBERT, B.	LALO	CERN-WA-016	DORNAN, P.J.	LOIC	SLAC-BC-060
AUER, I.P.	ANL	ANL-E-435	DOWELL, J.D.	BIRM	CERN-WA-039
AYRES, D.	ANL	ANL-E-427	DOWELL, J.D.	BIRM	CERN-WA-012
BACON, T.C.	LOIC	CERN-WA-032	DUBOC, J.	CURI	CERN-WA-021
BADANY, O.E.	NADI	CERN-WA-061	DZIERBA, A.	IND	FNAL-110A
BAILLEY, J.	DARE	CERN-PS-142	EDELSTEIN, R.M.	CMU	BNL-596
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RUSHBROOKE, J.G.	CAMB	CERN-UA-05	UNDERWOOD, D.	ANL	ANL-E-449
RYKALIN, V.I.	SERP	SERP-E-144	USHIDA, N.	AICH	FNAL-573
RYKALIN, V.I.	SERP	SERP-E-110	VAN DE WALLE, R.T.	NIJM	CERN-WA-027
RYSECK, H.E.	BERL	SERP-E-104	VAN ROSSUM, L.	SACL	CERN-PS-137
SACHS, A.M.	COLU	BNL-745	VENUS, W.	RHEL	CERN-NA-020
SAL, F.	TOKY	KEK-080	VENUS, W.	RHEL	CERN-WA-059
SAKITT, M.	BNL	BNL-641	VENUS, W.	RHEL	CERN-WA-024
SAKITT, M.	BNL	BNL-742	VILLAR, E.	SANT	CERN-NA-017
SAMIOS, N.	BNL	BNL-427	VOCI, A.C.	PADO	CERN-PS-178
SANDWEISS, J.	YALE	FNAL-490	VOVONKO, A.S.	SERP	SERP-E-136
SANDWEISS, J.	YALE	FNAL-630	VOYVODIC, L.	FNAL	FNAL-564
SANNES, F.	RUTG	FNAL-552	WALCHER, T.	MPIH	CERN-PS-163-1
SASAKI, A.	AKIT	INS-15-2	WALCHER, T.	MPIH	CERN-PS-173
SAXON, D.H.	RHEL	RHEL-166	WALCHER, T.	MPIH	CERN-PS-163-2
SCHALK, T.	UCSC	SLAC-E-123A	WALKER, J.K.	FNAL	FNAL-594
SCHLEIN, P.	UCLA	CERN-R-608	WALKER, W.	DUKE	SLAC-BC-067
SCHMIDT, D.	DESY	DESY-126	WALKER, W.D.	DUKE	FNAL-597
SCHMIDT-PARZEFALL, W.	DESY	DESY-146	WEBB, R.	PRIN	FNAL-650
SCHMIDT-PARZEFALL, W.	DESY	DESY-ARGUS	WEBER, G.	DESY	DESY-114
SCIULLI, F.	CIT	FNAL-652	WEBSTER, M.S.	VAND	BNL-705
SCIULLI, F.	CIT	FNAL-616	WELHAMMER, P.	CERN	CERN-WA-003
SCIULLI, F.J.	CIT	FNAL-356	WEISBERG, H.	PENN	FNAL-324
SEIDL, A.	MICH	SLAC-E-128	WELSH, R.E.	WILL	BNL-723
SELOVE, W.	PENN	FNAL-395	WHARTON, W.R.	CMU	BNL-692
SELOVE, W.	PENN	FNAL-609	WHITE, D.H.	BNL	BNL-734
SENS, J.C.	ANIK	CERN-R-607	WHITMORE, J.	MSU	FNAL-597
SEYBOTH, P.	MPIM	CERN-NA-005	WICKLUND, A.B.	ANL	ANL-E-462
SHAEVITZ, M.	CIT	FNAL-652	WICKLUND, A.B.	ANL	ANL-E-441
SHEPARD, P.	PITT	FNAL-553	WICKLUND, A.B.	ANL	ANL-E-451
SHEPARD, W.D.	NDAM	FNAL-597	WIK, B.H.	DESY	DESY-139
SHLYAPNIKOV, P.V.	SERP	SERP-E-133	WIK, B.H.	DESY	DESY-143
SHOCHET, M.J.	CHIC	FNAL-326	WILKES, R.J.	WASH	FNAL-666
SHOCHET, M.J.	EPI	FNAL-258	WILKES, R.J.	WASH	FNAL-525
SHUVALOV, R.S.	SERP	SERP-E-130	WILKES, R.J.	WASH	FNAL-524
SIMONS, L.M.	KFZK, KARL	CERN-PS-175	WILLIAMS, H.H.	PENN	BNL-706
SINCLAIR, C.	SLAC	SLAC-E-122	WILLIS, W.	CERN	CERN-R-806
SIXEL, P.	AACH	CERN-WA-028	WINSTEIN, B.	CHIC	FNAL-584
SMIRNOV, V.M.	LENI	SERP-E-127	WINSTEIN, B.	EPI	FNAL-617
SMITH, A.J.S.	PRIN	FNAL-444	WINSTEIN, B.	CHIC	FNAL-486
SMITH, G.A.	MSU	SLAC-BC-064	WINTER, K.	CERN	CERN-WA-065
SMITH, G.A.	MSU	BNL-767	WINTER, K.	CERN	CERN-WA-018
SMITH, G.A.	MSU	BNL-762	WITHERELL, M.S.	PRIN	FNAL-567
SMITH, P.F.	RHEL	RHEL-144	WOJCICKI, S.	STAN	FNAL-379
SMOLYANKIN, V.T.	ITEP	SERP-E-120	WOLF, G.	DESY	DESY-PETRA-TASSO
SNOW, G.A.	UMD	FNAL-545	WOLTER, W.	CRAC	FNAL-574
SONDEREGGER, P.	CERN	CERN-WA-013	WOLTER, W.	CRAC	FNAL-508
SPINKA, H.	ANL	ANL-E-431	YAGER, P.M.	UCD	FNAL-663
STEINBERG, E.P.	ANL	ANL-E-422	YAMAMOTO, S.S.	TOKY	KEK-057
STEINBERG, E.P.	ANL	ANL-E-424	YAMASHITA, N.	INUS	INS-14-3
STEINBERG, P.H.	UMD	FNAL-468	YAMAZAKI, T.	TOKY	KEK-089
STEINBERGER, J.	CERN	CERN-WA-068	YAMIN, P.	BNL	FNAL-505
STEINBERGER, J.	CERN	CERN-WA-041	YAMIN, P.	RUTG	BNL-644
STEINBERGER, J.	CERN	CERN-WA-001	YOKOSAWA, A.	ANL	ANL-E-447
STEINBERGER, J.	CERN	FNAL-634	YOKOSAWA, A.	ANL	FNAL-581
STEINBERGER, J.	CERN	CERN-WA-054	YOKOSAWA, A.	ANL	ANL-E-433
STEINBERGER, J.	CERN	CERN-PS-169	YOON, T.S.	TNTO	ANL-E-428
STORK, D.	UCLA	FNAL-456	YOSHIMURA, Y.	KEK	KEK-062
STREIT, K.P.	HEID	CERN-WA-062.	YUAN, L.C.L.	BNL	FNAL-427
STROYNOWSKI, R.	SLAC	SLAC-E-127	ZELLER, M.E.	YALE	BNL-702
SUGAHARA, R.	KEK	KEK-006	ZICHICHI, A.	CERN	CERN-WA-044
SUGARMAN, R.M.	CHIC	FNAL-466	ZICHICHI, A.	CERN	CERN-R-421
SULAK, L.	HARV	BNL-718	ZOLIN, L.S.	JINR	SERP-E-121
SULYAEV, R.M.	SERP	SERP-E-100	ZUPANCIC, C.	MPIM	CERN-NA-004
SULYAEV, R.M.	SERP	SERP-E-113			

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 pp 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, $y \approx -\ln \tan \theta/2$ (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, mass² 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 of 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 $N(\text{PRONG})$, $N(\text{HADRON})$, 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₊ includes charge asymmetry δ for $K_L \rightarrow \pi \ell \nu$, η for $K_L \rightarrow \pi^+ \pi^-$, $x+iy$ for $K_S \rightarrow \pi^+ \pi^- \pi^0$).
- 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.
 - $\rho, \eta, \xi, \delta, h, |g_A/g_V|, \phi_{AV}, g_S, g_T, g_P$ for μ decay
 - slopes g and slope difference σ (CP viol) for $K \rightarrow 3\pi$
 - form factors $f_+, f_-, f_0, \lambda_+, \lambda_-, \lambda_0, \xi, f_S, f_T$ for $K \rightarrow \pi \ell \nu$
 - CP violation parameter $x+iy$ for $K_S \rightarrow \pi^+ \pi^- \pi^0$
 - charge asymmetry δ for $K_L \rightarrow \pi \ell \nu$
 - CP viol. parameters $\eta_{+-}, \eta_{00}, \phi_{+-}, \phi_{00}, \epsilon, \epsilon'$ for $K \rightarrow \pi \pi$
 - $\Delta S \neq \Delta Q$ parameter x
 - for $K^0 \rightarrow \pi^+ \pi^- \nu$
 - or $\bar{K}^0 \rightarrow \pi^- \pi^+ \nu$
 - charge asymmetry for η decay
 - $|g_A/g_V|, \delta, \alpha, \beta, \gamma, \phi, \Delta$ 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 Institut	Bergen, Norway
BERL	Inst. Hochenergiephys. DAW	Zeuthen/Berlin, DDR
BERN	Univ. Bern	Bern, Switzerland
BCNA	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
JAFN	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. Autonomia 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
MPH	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
OARM	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)

TINTO	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
ADELO antiparticle of DEL(1232P33)0
ADEUT antideuteron
ADO charmed meson (C=-1)
AG silver nucleus
AHE anti-helium-4 nucleus
AHE3 anti-helium-3 nucleus
AKO S=-1 KO
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
narrow nucleon-antinucleon state
ANN(1935)0
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
AXIO AXI+
AO 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
beryllium nucleus
BE generic name for any particle with naked beauty
BEAUTY 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)-
DELO 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
DO 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
 KO 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)+ 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
 PIO
 PIOS two or more pi0's
 PIO(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 unspecified 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
 VMESONO 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)	$\pm\Delta p/p$ (%)	Production angle ($^\circ$)	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^-	$4 \times 10^4/3 \times 10^4$		
	B2			- same characteristics as B4 above -					To multiparticle spectrometer	
↑	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
							p/\bar{p}	$1.5 \times 10^5/200$		
							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}	$3 \times 10^6/30$		
							π^+/π^-	$10^5/3 \times 10^4$		
↑	A3	≤ 4	12	0	9.5	8	K^+/K^-	$8 \times 10^4/4 \times 10^4$	4	Typically 10^{11} ppp; alternates with A1
							p/\bar{p}	$2 \times 10^5/6 \times 10^3$		
							π^+/π^-	$10^6/8 \times 10^5$		
↑	B5	6-20		4	0.4	2.6	Λ/n	$300/4 \times 10^5$	6-20	Typically 10^{10} ppp
							K_S/K_L	$27/2 \times 10^4$		
↑	U	1.5 (peak)					$\nu/\bar{\nu}$	$10^7/7 \times 10^6$ 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, $2 \times 1 \times 10 \text{ mm}^3$ 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	$1 \times 10^5 n/3 \times 10^{-10} \text{sr}/10^{11} \text{p}$	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	$\sim 10^{13} \text{p}$ 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	$1 \times 10^9 e^-$ 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	$\sim 2 \times 10^5 K^+$ (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	$1.4 \times 10^9 \nu_K$	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	$1.1 \times 10^9 \nu_K$	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)	$\pm\Delta p/p$ (%)	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	$< 2 \times 10^{13}$ 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 π^-	3000 (at 0.6 mr) 300	200	Diffraction protons available at 400 GeV/c with flux $< 3 \times 10^{12}$ per pulse
M4	35-200	6	7-8	1	K^- π^-	60 100	75	
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	50-275 100-275	2	0-1	4-16	μ^+ π^+	150 > 1000	225	To muon/hadron spectrometer
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 20-300	7 5	0-8 0	8	π^- \bar{p}	10^5 1000	200 100	p-west secondary beam
P4	20-350				Σ^-	2000	300	p-center beam charged hyperons
M3	300 (peak)		0.3-1.1	$\sim 10^{-4}$	n K_L^0	200/cm ² 5000	total	
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 ($^\circ$)	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
π 1	4-8	2	1.5	0.33	33	π^+/π^-	$2 \times 10^6/6 \times 10^5$	8	Under construction; fluxes estimated
π 2	2-4.3	1	10	0.594	31.3	p/\bar{p} π^+/π^-	$10^4/10^2$ $2 \times 10^5/1 \times 10^5$	3	Internal target beam; fluxes for 10^{11} ppp
T1	0.5-2.3	2	23	0.16	18.8	π^+/π^-	$5 \times 10^4/4 \times 10^3$	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
	P					400			
	\bar{p}					30			
	π^+					400			
	π^-					300			
K2	1-2	3	0	1.02	27.9	K^+/K^-	$1.5 \times 10^5/5.7 \times 10^4$	2	
						p/\bar{p}	$2 \times 10^7/1.2 \times 10^4$		
						π^+/π^-	$1.7 \times 10^7/1.4 \times 10^7$		
K3-S	0.5-1.0	2	0	7.3	14.4	K^+/K^-	$4.2 \times 10^4/1.0 \times 10^4$	0.6	Fluxes are for the S (short) mode of operation
(K3-L)	"	"	"	(3.0)	(16.5)	p/\bar{p}	$7 \times 10^7/3.5 \times 10^2$	0.8	
						π^+/π^-	$5 \times 10^7/5 \times 10^7$	0.8	
π - μ	0.1-0.45		87	20		π^\pm	10^6	0.15	
						μ^\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)	$\Delta p/p$ (%)	Production angle (mr)	Solid angle (μ sr)	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 \pm	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	π^\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 (μ s)	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 ($\text{cm}^{-2} \text{sec}^{-1}$)	Average luminosity ($\text{cm}^{-2} \text{sec}^{-1}$)	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 ($^\circ$)	Solid angle (msr)	Particles	Maximum particles per pulse	at (GeV/c)	Repetition rate (Hz)	Facility	Comments	
21	1-16	≤ 4.0	1	0.03	K^+/K^-	17/8	10	≤ 180	LASS	Separated: $\pi/K \approx 1/30$ $\pi/\bar{p} \approx 1/14$	
					p/\bar{p}	40/6					
27	1-8	9.0 FWHM	0	10^{-7}	π^+/π^-	10^3	2.5	≤ 20	40" b.c. hybrid facility	Backscattered laser beam	
					e^-	10^4					
					e^+	10^4					
3	≤ 15	0.1-1.0	0	0.03	e^+	2×10^{10}	All	≤ 90	ESA 1.6, 8, and 20 GeV/c spectrometers	e^+ beam requires high power source; all fluxes at $\Delta p/p = \pm 0.25\%$ + High intensity source; longitudinal polarization = 0.4 + Low intensity source; longitudinal polarization = 0.85 + 0° bremsstrahlung + Coherent bremsstrahlung, linearly polarized (10^9 EQ without collimation) + Linearly polarized at maximum energy by coherent pair production in graphite	
	≤ 23.5	0.1-1.0			e^-	5×10^{11}	All	≤ 360			
	3.237 j (j=1,...,6)	0.1-1.0			e^-	5×10^{11}		120, 180			
	3.237 j (j=1,...,6)	≥ 0.5			e^-	10^9		≤ 360			
	≤ 21.5	Brems.			0	γ	4×10^9 EQ	20			≤ 360
	5-15	7-10			0	γ	5×10^7 EQ	All			≤ 360
	≤ 21.5	Brems.			0	γ	2×10^8 EQ				≤ 360
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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