CDJ/BW/cj 19 September 1983

AC DESIGN GROUP

Summary Record of the International Meeting held on 7th September 1983

Present: B.Autin, M.Bell, R.Billinge, V.Chohan, M.Conte, D.Fiander, Z.Guo, W.Hardt, M.Harold, H.Horisberger, C.Hojvat, C.D.Johnson (Chairman part 1), E.Jones (Chairman part 2), H.Koziol, S.Maury, M.Martini, S.van der Meer, F.Pedersen, J.C.Schnuriger, R.Sherwood, P.Sievers, A.Sullivan, C.Taylor, L.Thorndahl, H.Umstätter, F.Völker, B.Williams, E.J.N.Wilson (Chairman part 3), A.Wrülich

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This meeting was divided into three parts: 1) presentation and discussion of certain outstanding sections of the first partial draft of the AC Design Report, 2) a brief presentation of material for the stochastic cooling chapters, 3) an overall review of the work to date.

Part 1) B.Williams presented A0-size drawings of the most recent versions of the lattices 83-08 and 83-08d. A.Wrülich explained his recent work on the stability of lattice 83-08 with a distributed sextupole scheme including sextupole elements in: the ends of dipoles, the profiles of wide quadrupoles, the missing-magnet straight sections. He also included the sextupoles resulting from interference between the quadrupoles and the end-fields of dipoles. The stability is worse than that found for a previous lattice, 83-03. Z.Guo has also been looking into various sextupole schemes and even the most favorable would be difficult to implement in practice. Finding an acceptable multipole scheme remains a first priority task.

W.Hardt, pursuing our earlier decision to keep lattice 83-08d warm, has refined it further. It now has a satisfactory working point, symmetry in the bending sections, zero dispersion regions at 3,6,9,& 12 o'clock, greater separation between quadrupoles and dipoles, smaller apertures and the maximum quadrupole strength is less than in 83-08. However, the space for cooling structures is reduced unless one uses some of the non-zero dispersion straight-sections. For the Design Report injection and transfer shemes have been worked out for 83-08 only, although W.Hardt has suggested an interesting solution for transfer in which both kicker and septum are placed in non-zero dispersion regions.

Part 2) C.Taylor and L.Thorndahl described very recent laboratory work, which has enabled them to make some preliminary comparisons between wide-band and stagger-tuned cooling systems for the AC. Both solutions are feasible and at present the choice between them is not clear since the stagger-tune solution, although using cheaper power needs more of it. Further work is needed before a clear choice can be made.

E.Jones explained the space and cost-comparisons for cooling structures in various lattices that has been made by S.Milner. The cheapest solution is that for 83-08d as it involves the minimum number of tanks, but gives only 70% of the cooling electrode length of that for 83-08. The optimum solution will appear only after a thorough comparison of all the detailed requirements for space in the machine.

Part 3) E.J.N.Wilson gave a resumé of the Design Study to date and then R.Billinge explained the financial position. Additional funds will be required to permit construction of even the reduced budget AC in Hall 193. Also the AC must be constructed and run-in with the minimum interference to the low-energy antiproton programme.

Despite the heavy work load due to the forthcoming AA ME studies at the start of Period 4, a deadline of the beginning of October was set for the final version of the Design Report. A second full editorial meeting will be held on the 28th September.

C.D.Johnson, B.Williams.

83-08

AC LATTICE D-D   PS-AGS 75.03   30/07/83 17.53.54

CIRCUMFERENCE = 182.43284   2 HALF SUPERPERIODS   STRAIGHT MAGNETS   ALL VALUES AT EXIT OF ELEMENTS

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

NO	ELEM	L(M)	ANG(MR)	K(1/M2)	BETAV(M)	BETAH(M)	ALPHAV	ALPHAH	MUV/2PI	MUH/2PI	ALPHAP(M)	ALPHAP'
INITIAL					12.626	4.590	0.000	0.000	0.00000	0.00000	-.000	.000
1	L0	.0000	0.0000	0.0000000	12.626	4.590	-.000	-.000	.00000	.00000	-.000	.000
2	QD1	.3500	0.0000	.5105437	11.862	4.910	2.137	-.934	.00451	.01187	-.000	.000
3	L1	.4091	0.0000	0.0000000	10.192	5.739	1.945	-1.090	.01043	.02414	-.000	-.000
4	L2	1.7140	0.0000	0.0000000	4.904	10.597	1.141	-1.744	.04940	.05941	-.000	-.000
5	L1	.4091	0.0000	0.0000000	4.049	12.088	.949	-1.900	.06403	.06517	-.000	-.000
6	QF1	.3500	0.0000	-.4879818	3.664	12.703	.174	.178	.07866	.06962	-.000	.000
7	QF1	.3500	0.0000	-.4879818	3.796	11.849	-.558	2.214	.09377	.07411	-.000	.000
8	L1	.4091	0.0000	0.0000000	4.311	10.121	-.700	2.010	.10989	.08006	-.000	.000
9	L2	1.7140	0.0000	0.0000000	7.724	4.694	-1.292	1.156	.15789	.12006	-.000	.000
10	L1	.4091	0.0000	0.0000000	8.839	3.831	-1.433	.953	.16577	.13544	-.000	.000
11	QD1	.3500	0.0000	.5105437	9.301	3.443	.141	.179	.17186	.15096	-.000	.000
12	QD1	.3500	0.0000	.5105437	8.650	3.570	1.680	-.548	.17800	.16704	-.000	.000
13	L1	.4091	0.0000	0.0000000	7.349	4.079	1.500	-.697	.18617	.18414	-.000	.000
14	L2	1.7140	0.0000	0.0000000	3.507	7.541	.742	-1.322	.24098	.23414	-.000	.000
15	L1	.4091	0.0000	0.0000000	2.974	8.684	.561	-1.471	.26119	.24219	-.000	.000
16	QF1	.3500	0.0000	-.4879818	2.803	9.208	-.060	.003	.28073	.24836	-.000	.000
17	QF1	.3500	0.0000	-.4879818	3.062	8.679	-.696	1.477	.29998	.25453	.000	.000
18	L1	.4091	0.0000	0.0000000	3.712	7.532	-.894	1.327	.31934	.26259	.000	.000
19	L2	1.7140	0.0000	0.0000000	8.200	4.059	-1.725	.699	.36962	.31275	.000	.000
20	L1	.4091	0.0000	0.0000000	9.693	3.549	-1.923	.549	.37692	.32994	.000	.000
21	QD1	.3500	0.0000	.5105437	10.448	3.421	-.189	-.176	.38240	.34612	.000	.000
22	QD1	.3500	0.0000	.5105437	9.947	3.805	1.591	-.945	.38781	.36175	.000	.000
23	L5	.3500	0.0000	0.0000000	8.877	4.526	1.466	-1.119	.39374	.37519	.000	.000
24	SD	.0500	0.0000	0.0000000	8.731	4.641	1.449	-1.144	.39464	.37692	.000	.000
25	L0	.0000	0.0000	0.0000000	8.731	4.641	1.449	-1.144	.39464	.37692	.000	.000
26	B	1.9513	261.7993	0.0000000	4.032	10.907	.876	-2.104	.44798	.42062	.254	.263
27	L0	.0000	0.0000	0.0000000	4.032	10.908	.876	-2.104	.44798	.42062	.254	.263
28	SF	.0500	0.0000	0.0000000	3.946	11.119	.854	-2.129	.44997	.42135	.268	.263
29	L5	.3500	0.0000	0.0000000	3.401	12.670	.701	-2.303	.46520	.42604	.360	.263
30	QF3	.3500	0.0000	-.5890000	3.193	13.373	-.092	.343	.48234	.43027	.438	.181
31	QF3	.3500	0.0000	-.5890000	3.536	12.212	-.912	2.893	.49915	.43458	.485	.085
32	L5	.3500	0.0000	0.0000000	4.237	10.281	-1.093	2.625	.51356	.43955	.514	.085
33	SF	.0500	0.0000	0.0000000	4.348	10.020	-1.119	2.586	.51542	.44033	.519	.085
34	L0	.0000	0.0000	0.0000000	4.348	10.020	-1.119	2.586	.51542	.44033	.519	.085
35	B	1.9513	261.7993	0.0000000	10.240	2.897	-1.797	1.106	.56265	.49861	.937	.348
36	L0	.0000	0.0000	0.0000000	10.240	2.897	-1.797	1.106	.56265	.49861	.937	.348
37	SD	.0500	0.0000	0.0000000	10.421	2.788	-1.818	1.068	.56342	.50141	.954	.348
38	L5	.3500	0.0000	0.0000000	11.744	2.135	-1.962	.799	.56846	.52432	1.076	.348
39	QD1	.3500	0.0000	.5105437	12.391	1.784	.152	.224	.57303	.55331	1.233	.554
40	QD1	.3500	0.0000	.5105437	11.540	1.809	2.228	-.295	.57764	.58485	1.468	.794
41	L5	.3500	0.0000	0.0000000	10.044	2.089	2.048	-.505	.58281	.61366	1.745	.794
42	SD	.0500	0.0000	0.0000000	9.840	2.141	2.022	-.535	.58361	.61742	1.785	.794
43	L3	2.1515	0.0000	0.0000000	3.534	7.225	.909	-1.828	.64305	.70954	3.492	.794
44	SF	.0500	0.0000	0.0000000	3.444	7.410	.884	-1.858	.64533	.71063	3.532	.794
45	L5	.3500	0.0000	0.0000000	2.889	8.784	.703	-2.068	.66303	.71754	3.810	.794
46	QF3	.3500	0.0000	-.5890000	2.652	9.616	-.008	-.252	.68345	.72353	3.948	-.011
47	QF3	.3500	0.0000	-.5890000	2.901	9.120	-.721	1.635	.70383	.72941	3.802	-.814
48	L5	.3500	0.0000	0.0000000	3.470	8.025	-.904	1.494	.72142	.73592	3.517	-.814
49	SF	.0500	0.0000	0.0000000	3.562	7.877	-.931	1.474	.72369	.73692	3.476	-.814
50	L0	.0000	0.0000	0.0000000	3.562	7.877	-.931	1.474	.72369	.73692	3.476	-.814
51	B	1.9513	261.7993	0.0000000	8.821	3.690	-1.672	.697	.78028	.79516	2.159	-.551
52	L0	.0000	0.0000	0.0000000	8.821	3.690	-1.672	.697	.78028	.79516	2.159	-.551
53	SD	.0500	0.0000	0.0000000	8.990	3.621	-1.694	.677	.78117	.79734	2.132	-.551
54	L5	.3500	0.0000	0.0000000	10.228	3.197	-1.844	.536	.78698	.81374	1.939	-.551
55	QD1	.3500	0.0000	.5105437	10.891	3.060	-.010	-.138	.79221	.83177	1.805	-.218
56	QD1	.3500	0.0000	.5105437	10.242	3.398	1.826	-.847	.79743	.84926	1.784	.101
57	L5	.3500	0.0000	0.0000000	9.015	4.053	1.678	-1.024	.80323	.86430	1.819	.101
58	SD	.0500	0.0000	0.0000000	8.849	4.156	1.657	-1.049	.80412	.86623	1.824	.101
59	L0	.0000	0.0000	0.0000000	8.849	4.157	1.657	-1.049	.80412	.86624	1.824	.101
60	B	1.9513	261.7993	0.0000000	3.618	10.085	.932	-2.024	.86016	.91439	2.272	.364
61	L0	.0000	0.0000	0.0000000	3.618	10.085	.932	-2.024	.86016	.91439	2.272	.364
62	SF	.0500	0.0000	0.0000000	3.526	10.289	.906	-2.049	.86239	.91517	2.290	.364
63	L5	.3500	0.0000	0.0000000	2.955	11.785	.725	-2.226	.87968	.92023	2.418	.364
64	QF3	.3500	0.0000	-.5890000	2.706	12.500	.004	.233	.89967	.92476	2.457	-.142
65	QF3	.3500	0.0000	-.5890000	2.950	11.474	-.716	2.027	.91968	.92936	2.320	-.637
66	L5	.3500	0.0000	0.0000000	3.514	9.720	-.896	2.386	.93701	.93464	2.097	-.637
67	SF	.0500	0.0000	0.0000000	3.605	9.483	-.922	2.351	.93925	.93546	2.065	-.637
68	L0	.0000	0.0000	0.0000000	3.605	9.483	-.922	2.351	.93925	.93546	2.065	-.637
69	B	1.9513	261.7993	0.0000000	8.787	2.973	-1.643	1.023	.99560	.99464	1.090	-.374
70	L0	.0000	0.0000	0.0000000	8.787	2.973	-1.643	1.023	.99560	.99465	1.090	-.374
71	SD	.0500	0.0000	0.0000000	8.952	2.872	-1.664	.989	.99650	.99737	1.071	-.374
72	L5	.3500	0.0000	0.0000000	10.108	2.264	-1.811	.748	1.00234	1.01928	.941	-.374
73	QD1	.3500	0.0000	.5105437	10.811	1.950	.012	.170	1.00760	1.04620	.838	-.216
74	QD1	.3500	0.0000	.5105437	10.152	2.016	1.832	-.363	1.01286	1.07475	.788	-.071
75	L5	.3500	0.0000	0.0000000	8.923	2.339	1.682	-.560	1.01872	1.10051	.763	-.071
76	SD	.0500	0.0000	0.0000000	8.755	2.396	1.660	-.588	1.01962	1.10387	.760	-.071
77	L31	1.9235	0.0000	0.0000000	3.956	6.737	.835	-1.668	1.07260	1.18332	.623	-.071
78	SF	.0500	0.0000	0.0000000	3.874	6.905	.814	-1.696	1.07464	1.18449	.619	-.071
79	L5	.3500	0.0000	0.0000000	3.357	8.161	.663	-1.893	1.09011	1.19191	.594	-.071
80	QF1	.3500	0.0000	-.4879818	3.132	9.023	-.098	-.521	1.10749	1.19834	.552	-.170
81	QF1	.3500	0.0000	-.4879818	3.369	8.862	-.682	.973	1.12484	1.20451	.477	-.258
82	L5	.3500	0.0000	0.0000000	3.900	8.208	-.834	.896	1.14024	1.21104	.387	-.258
83	SF	.0500	0.0000	0.0000000	3.985	8.119	-.856	.885	1.14225	1.21202	.374	-.258
84	L0	.0000	0.0000	0.0000000	3.985	8.119	-.856	.885	1.14225	1.21202	.374	-.258
85	B	1.9513	261.7993	0.0000000	8.597	5.521	-1.426	.461	1.19635	1.25854	.130	.005
86	L0	.0000	0.0000	0.0000000	8.597	5.521	-1.426	.461	1.19635	1.25854	.130	.005
87	SD	.0500	0.0000	0.0000000	8.740	5.475	-1.444	.450	1.19727	1.25999	.131	.005
88	L5	.3500	0.0000	0.0000000	9.794	5.187	-1.567	.374	1.20329	1.27045	.133	.005
89	QD1	.3500	0.0000	.5105437	10.289	5.273	.184	-.625	1.20879	1.28122	.139	.030
90	QD1	.3500	0.0000	.5105437	9.547	6.099	1.891	-1.783	1.21435	1.29115	.154	.056
91	L1	.4091	0.0000	0.0000000	8.080	7.672	1.695	-2.063	1.22176	1.30067	.176	.056
92	SD1	.0500	0.0000	0.0000000	7.912	7.880	1.671	-2.097	1.22276	1.30170	.179	.056
93	L4	1.0500	0.0000	0.0000000	4.931	13.040	1.168	-2.817	1.24964	1.31821	.237	.056
94	SF1	.0500	0.0000	0.0000000	4.816	13.323	1.144	-2.851	1.25128	1.31882	.240	.056
95	L1	.4091	0.0000	0.0000000	3.960	15.771	.948	-3.131	1.26621	1.32331	.263	.056
96	QF1	.3500	0.0000	-.4879818	3.571	17.035	.185	-.407	1.28119	1.32667	.274	.009
97	QF1	.3500	0.0000	-.4879818	3.691	16.319	-.532	2.412	1.29671	1.32998	.270	-.037
98	L1	.4091	0.0000	0.0000000	4.184	14.415	-.675	2.241	1.31331	1.33423	.254	-.037
99	SF1	.0500	0.0000	0.0000000	4.253	14.192	-.692	2.220	1.31520	1.33478	.252	-.037
100	L6	.6100	0.0000	0.0000000	5.227	11.638	-.904	1.966	1.33585	1.34234	.230	-.037
101	SD1	.0500	0.0000	0.0000000	5.318	11.443	-.922	1.945	1.33736	1.34303	.228	-.037
102	L1	.4091	0.0000	0.0000000	6.130	9.922	-1.064	1.774	1.34877	1.34914	.213	-.037
103	QD1	.3500	0.0000	.5105437	6.511	9.314	.000	.000	1.35750	1.35500	.206	-.000
104	L0	.0000	0.0000	0.0000000	6.511	9.314	-.000	.000	1.35750	1.35500	.206	-.000

DP/P	COSMU(H)	Q(H)	QPRIME(H)	BETAMAX(H)	COSMU(V)	Q(V)	QPRIME(V)	BETAMAX(V)	XMAX(H)	GAMMA TR.
0.0000	-.24869	5.4200	0.0000	17.0348	-.21815	5.4300	0.0000	12.6256	3.9475	4.8872

DP/P = 0.0000   AVERAGE X = 0.0000   AVERAGE ALPHAP = 1.2156   R.F. GAMMA TR. = 4.8872

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TIME =     .102 SECONDS
**** 7000 SCOPE 2.1.4 LVL 234V07L4   04/01/83     30/07/83       83211

SYS DEVICES 844/ 4/PF 819/10/PF FLS=200K FLL=1740K MXS=150K MXL=400K MXB=600B

HH.MM.SS CPU SECOND ORIGIN
          17.53.08.MFA. 4n      CERN NOS/BE 1.5  577 14A-7   0 FRI 12.14  MFA 730
17.53.47 00000.004 MFZ.         X7GULDH
17.53.47 00000.005 MFZ.         -X7GUL.
17.53.47 00000.005 JOB.         -ACCOUNT,GUG,PS,******.
17.53.48 00000.014 USR.           CRN01 - DIV COST    BALANCE          71685.00  FRS.          43 PERCENT OF BUDGET
17.53.48 00000.025 JOB.         -ATTACH,L,7600LIBRARY,ID=PROGLIB.
17.53.48 00000.028 MFZ.            PF254 - CYCLE  810 ATTACHED FROM SN=SYSTEM
17.53.48 00000.028 JOB.         -LIBRARY,L.
17.53.49 00000.081 JOB.         -FIND,A,AGSMARTI1200,ID=IS490MART.
17.53.49 00000.105 USR.            FIND    - CYCLE 511 ATTACHED
17.53.49 00000.105 JOB.         -FIND,B,AGSMARTIBIN,ID=IS490MART,CY=2.
17.53.50 00000.130 USR.            FIND    - CYCLE   2 ATTACHED
17.53.50 00000.130 JOB.         -FIND,C,PSAGS,ID=IS170RISS.
17.53.50 00000.154 USR.            FIND    - CYCLE 511 ATTACHED
17.53.50 00000.155 JOB.         -LOAD,C.
17.53.50 00000.155 JOB.         -LOAD,A.
17.53.50 00000.156 LOD.         -B.
17.53.51 00000.186 MFZ.            LD314 - RING DUPLICATE DECK OS.COG
17.53.51 00000.188 MFZ.            LD314 - MPROD DUPLICATE DECK OS.COG
17.53.51 00000.188 MFZ.            LD314 - PLOTT DUPLICATE DECK OS.COG
17.53.51 00000.235 MFZ.            LD314 - WIGGLE DUPLICATE DECK OS.COG
17.53.51 00000.236 MFZ.            LD314 - MATRIX DUPLICATE DECK OS.COG
17.53.51 00000.247 MFZ.            LD314 - BETATR DUPLICATE DECK OS.COG
17.53.51 00000.263 MFZ.            LD314 - NEWAGS DUPLICATE DECK OS.COG
17.53.51 00000.276 MFZ.            LD314 - ORBITE DUPLICATE DECK OS.COG
17.53.54 00000.812 MFZ.            LD010 -     129 TABLE MOVES, FLS REQUIRED TO LOAD - 0025330 OU.COG
17.53.54 00000.817 MFZ.            LD602 - LOADER NON-FATAL ERROR FLAG SET OS.EXP
17.53.54 00000.818 USR.          FORTRAN LIBRARY 460              26/03/81
17.53.54 00000.925 USR.              STOP
17.53.54 00000.925 USR.             .106 CP SECONDS EXECUTION TIME
17.53.54 00000.927 MFZ.            RM770 - MAXIMUM ACTIVE FILES                          1
17.53.54 00000.927 MFZ.            RM771 - OPEN/CLOSE CALLS                              8
17.53.54 00000.927 MFZ.            RM772 - DATA TRANSFER CALLS                         304
17.53.54 00000.928 MFZ.            RM773 - CONTROL/POSITIONING CALLS                     7
17.53.54 00000.928 MFZ.            RM774 - BM DATA TRANSFER CALLS                      445
17.53.54 00000.928 MFZ.            RM775 - BM CONTROL/POSITIONING CALLS                 58
17.53.54 00000.928 MFZ.            RM776 - QUEUE MANAGER CALLS                          80
17.53.54 00000.929 MFZ.            RM777 - RECALL CALLS                                 70
17.53.54 00000.929 MFZ.            SCM                        12.006  KWS
17.53.54 00000.929 MFZ.            LCM                         6.445  KWS
17.53.54 00000.929 MFZ.            I/O                         0.005  MW
17.53.54 00000.929 MFZ.            RMS                         0.274  MWS
17.53.55 00000.930 MFZ.            USER                        0.088  SEC
17.53.55 00000.930 MFZ.            JOB                         0.931  SEC
17.53.55 00000.930 MFZ.            DIO                       250.755  KW
17.53.55 00000.930 MFZ.         ************************************************
17.53.55 00000.930 MFZ.         *         COST OF JOB IN SFR          3.00       *
                                ************************************************
                                  SC050 - 000016 SC/LC SNAPS
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NEW VERSION OF NOS/BE ON MFB

AS PART OF THE PREPARATION FOR THE INSTALLATION OF THE NEW CDC COMPUTERS IT WILL BE NECESSARY TO UPGRADE THE NOS/BE SYSTEM USED ON THE FRONT-ENDS. AS A FIRST STEP IT IS PLANNED TO INTRODUCE LEVEL 577 OF NOS/BE ON MFB ONLY AT 08.00 ON WEDNESDAY 20TH JULY. DEFCCM PROCEDURES THAT HAVE NOT BEEN RECOMPILED AS RECOMMENDED IN THA LAST COMPUTER NEWSLETTER WILL NOT WORK WITH THE NEW SYSTEM.

THE NOS/BE PRODUCT SET (FTN, FTN5, ETC) IS ALSO UPGRADED TO LEVEL 577 IN THE NEW SYSTEM BUT IS EXPECTED TO BE COMPATIBLE BETWEEN THE CURRENT AND NEW LEVELS.

PLEASE REPORT ANY PROBLEMS TO THE PCO (4952).