AM-79-091

American Mineralogist, Volume 64, pages 402–408, 1979

The structure of a strained intermediate microcline in cryptoperthitic association with twinned plagioclase

PAUL H. RIBBE

Department of Geological Sciences
Virginia Polytechnic Institute and State University
Blacksburg, Virginia 24061

Abstract

The crystal structure of a strained intermediate microcline (a = 8.643, b = 12.929, c = 7.190A; α = 90.1°, β = 116.2°, γ = 89.6°; V = 720.6A^3; $C\bar{1}$), intergrown as untwinned lamellae in a cryptoperthitic ternary feldspar of bulk composition $Or_{33}Ab_{58}An_8Cn_1$, has been refined to R = 0.049 using 893 reflections. The cryptoperthite is specimen K-235 from the Kûngnât syenites of SW Greenland. Unit-cell volume gives the best estimate of the composition of the microcline phase, $Or_{91}Ab_8Cn_3$, which constitutes ~36 percent of the bulk feldspar. The plagioclase composition, determined by mass balance, is approximately $Ab_{87}An_{13}$.

The plagioclase is twinned at a scale of 100–500A on both albite- and pericline-twin laws, and special caution was required to exclude from the refinement diffracted peaks from the microcline lattice which overlapped with diffracted peaks from these four plagioclase lattices. In spite of the non-continuous, lamellar nature of the microcline phase in the cryptoperthite, the mosaic texture resulted in only 0.4°2θ diffraction peak widths.

Due to its intergrowth with twinned plagioclase, the microcline is strained (Δa = 0.30A) in the manner described by Stewart and Wright (1974). This apparently does not prohibit the use of b–c and α^*–γ^* plots to estimate Al/Si distribution in the tetrahedral sites (t_1o ~ 0.51, t_1m ~ 0.35, $t_2o = t_2m$ ~ 0.07 Al); mean T–O distances (T_1O = 1.671, T_1m = 1.651, T_2O = 1.622, T_2m = 1.627A) give similar values (0.47, 0.32, and 0.10 Al, respectively). Without a meaningful basis of comparison, the effects of strain on individual bond lengths and angles could not be evaluated quantitatively.

Introduction

In the past decade it has been shown that alkali feldspars, $(K,Na)AlSi_3O_8$, can be characterized most satisfactorily by their lattice parameters. Wright and Stewart (1968) proposed a plot of the b and c cell edges (see Fig. 1) "because on such a graph points for samples of different composition but equivalent Al–Si order fall into more or less linear arrays regardless of the symmetry of the starting material" (Stewart, 1975). Samples of the same composition but different Al–Si order (*e.g.*, the maximum microcline–high sanidine series) are arrayed on subparallel lines running between the limiting arrays for the completely ordered maximum microcline–low albite series and the disordered high sanidine–analbite (or high albite) series. Using data from crystal structure analyses, Stewart and Ribbe (1969) determined that relative position on the b–c plot very closely approximates the total aluminum content of the T_1 tetrahedral sites, which are designated T_1O and T_1m in triclinic alkali feldspars. Adopting the convention introduced by Kroll (1971), in which t_1o represents the probability of finding aluminum in T_1O, they contoured the b–c quadrilateral with lines of equal Al content in the T_1 sites: thus $t_1o + t_1m = 1.00$ for the ordered series in which all the Al in the formula unit is concentrated in the T_1O site and Si occupies the other three sites (*i.e.*, $t_1o = 1.00$; $t_1m = t_2o = t_2m = 0.00$), and $t_1o + t_1m = 0.50$ for the disordered series in which Al is randomly distributed over the four tetrahedral sites (*i.e.*, $t_1o = t_1m = t_2o = t_2m = 0.25$).

Using data from homogeneous alkali feldspars, Stewart and Wright (1974) contoured the b–c plot for the a cell dimension, estimating a standard error for the contours of ±0.02A. They discussed in considerable detail a phenomenon which is especially common in cryptoperthitic intergrowths of two feldspar

0003-004X/79/0304-0402$02.00

Table 5. Ribbe (1978). Structure factors for K-235 microcline

H	K	L	Y(OBS)	Y(CALC	SIG(O)
-10	0	5	34.6737	32.47	3.43
-10	2	3	5.2145	7.08	10.31
-10	2	5	19.1200	16.67	3.54
-10	0	3	35.2464	32.86	3.01
-10	0	2	32.9997	32.87	3.08
-9	1	6	3.4582	1.15	15.11
-9	1	5	6.4433	5.41	7.12
-9	1	4	48.6269	49.54	3.23
-9	1	3	10.8601	13.66	5.01
-9	1	2	3.4757	10.61	15.22
-9	1	1	13.0558	10.83	4.56
-9	1	0	23.2670	23.83	3.85
-9	3	6	5.4755	1.38	10.27
-9	3	5	2.2084	0.25	21.65
-9	3	4	20.2570	18.61	3.10
-9	3	3	39.5326	40.69	3.08
-9	3	2	10.7546	10.90	4.83
-9	3	1	53.9540	51.93	3.45
-9	3	0	19.2452	20.63	5.07
-9	5	5	40.5434	40.65	3.30
-9	5	4	11.8973	6.89	4.32
-9	5	3	21.0954	18.59	3.00
-9	5	2	20.9898	20.76	3.13
-9	5	1	38.3313	36.13	3.10
-9	7	4	19.8194	19.71	3.42
-9	7	3	2.7271	3.40	18.91
-8	8	5	30.9108	28.75	2.95
-8	8	3	37.4211	35.64	3.00
-8	8	1	24.0487	21.74	3.05
-8	6	6	12.7091	10.79	4.36
-8	6	1	37.4123	35.88	2.92
-8	6	0	21.7051	20.61	3.28
-8	4	5	39.5918	39.68	2.98
-8	4	3	19.9246	22.96	3.29
-8	4	2	20.2713	20.21	3.36
-8	4	1	17.5197	19.45	3.54
-8	4	-1	59.4878	55.01	3.56
-8	2	7	21.3823	18.29	2.97
-8	2	6	21.0114	18.47	2.95
-8	2	5	40.7420	39.84	2.92
-8	2	4	11.3321	8.41	3.97
-8	2	3	34.5888	36.37	2.92
-8	2	2	31.9927	32.96	2.82
-8	2	1	9.1948	8.21	5.17
-8	2	0	17.4411	19.27	3.70
-8	2	-1	9.4990	5.86	5.10
-8	0	7	43.1918	40.58	2.99
-8	0	5	49.4072	49.71	3.18
-8	0	3	31.9254	32.00	2.79
-8	0	1	34.0937	35.22	3.51
-7	1	8	25.4376	21.94	3.02
H	K	L	Y(OBS)	Y(CALC	SIG(O)
-7	1	7	23.0434	24.17	3.23
-7	1	6	34.1457	31.27	2.69
-7	1	5	10.3071	10.11	4.65
-7	1	4	38.3408	38.85	2.80
-7	1	3	19.9794	20.44	2.83
-7	1	2	27.2826	28.55	2.60
-7	1	0	65.3549	64.95	3.68
-7	1	-1	8.4209	7.70	5.37
-7	1	-2	19.3069	16.32	3.02
-7	1	-3	10.5514	5.61	4.69
-7	3	7	49.2615	46.86	3.17
-7	3	5	28.5916	25.48	2.64
-7	3	4	32.4914	32.56	2.65
-7	3	3	56.5229	57.21	3.31
-7	3	2	47.1508	46.38	2.96
-7	3	1	29.4341	30.34	2.75
-7	3	0	47.4235	47.36	3.09
-7	3	-2	30.7020	30.69	2.98
-7	5	7	19.3988	16.84	3.36
-7	5	6	22.9124	22.41	3.15
-7	5	5	14.5090	15.53	3.62
-7	5	4	23.7506	23.63	2.81
-7	5	3	80.8015	80.84	4.29
-7	5	1	41.6632	39.56	2.88
-7	5	0	13.2000	12.17	4.00
-7	5	-1	29.2136	26.97	2.77
-7	5	-2	13.9925	17.52	4.45
-7	7	5	16.5554	16.10	3.79
-7	7	4	23.4613	26.96	3.89
-7	7	3	14.1049	15.09	4.18
-7	7	0	29.3027	25.35	4.63
-7	9	5	6.8392	16.02	9.32
-7	9	4	59.3149	58.81	3.59
-7	9	3	29.3790	29.70	2.88
-7	9	2	7.5050	2.96	6.34
-7	9	1	3.1495	9.25	16.73
-7	9	0	20.3627	22.43	3.91
-7	11	3	49.4606	47.85	3.34
-7	11	2	9.0886	13.64	6.96
-6	12	2	8.3577	5.55	6.46
-6	12	1	34.5563	31.73	3.05
-6	10	5	10.9215	8.58	5.10
-6	10	3	23.4061	22.33	3.03
-6	10	1	6.4543	6.88	7.72
-6	10	-1	15.1823	12.76	3.69
-6	8	6	28.0560	29.09	3.14
-6	8	5	44.4905	45.37	3.09
-6	8	4	6.9997	4.47	6.79
-6	8	3	55.5626	55.70	3.36
-6	8	2	22.9070	20.93	2.75
-6	8	1	22.8450	23.83	3.01
-6	8	0	23.5324	20.77	2.92
-6	8	-2	81.5124	77.52	4.40
-6	6	7	37.2213	36.62	3.03
-6	6	5	67.4395	68.96	3.77
H	K	L	Y(OBS)	Y(CALC	SIG(O)
-6	6	4	33.3224	35.54	3.13
-6	6	3	37.3046	37.07	3.24
-6	6	1	7.7896	8.06	5.37
-6	6	0	46.7337	46.40	3.51
-6	6	-1	22.6974	21.43	2.84
-6	4	7	12.1103	12.32	4.69
-6	4	6	16.3038	16.26	3.34
-6	4	5	25.6456	23.85	2.66
-6	4	4	32.2687	31.90	2.63
-6	4	3	17.2727	18.29	2.99
-6	4	2	26.2175	28.48	2.68
-6	4	1	70.9557	72.92	3.86
-6	4	-1	56.9975	58.45	3.38
-6	4	-2	23.8358	21.92	2.77
-6	4	-3	16.4582	16.85	3.66
-6	2	8	21.4491	19.51	3.36
-6	2	7	33.5606	33.38	2.90
-6	2	6	30.1822	30.62	2.80
-6	2	5	27.2924	27.60	2.62
-6	2	3	39.0420	38.64	2.63
-6	2	1	57.3211	60.42	3.37
-6	2	-1	28.3583	29.64	2.67
-6	2	-2	42.2276	45.83	3.29
-6	0	8	26.1963	27.26	3.07
-6	0	7	21.1651	22.13	3.11
-6	0	5	57.4363	60.79	3.35
-6	0	4	91.0144	93.59	4.65
-6	0	3	38.2843	33.53	3.61
-6	0	2	131.3284	133.79	6.45
-6	0	1	50.0013	51.07	3.02
-6	0	-1	36.9254	37.85	2.74
-6	0	-2	19.2753	20.34	3.02
-5	1	7	8.6751	8.61	5.43
-5	1	6	58.4824	60.03	3.40

Table 5. Ribbe (1978). Structure factors for K-235 microcline

H	K	L	Y(OBS)	Y(CALC)	SIG(O)
-5	1	5	55.7452	58.30	3.23
-5	1	4	61.1363	63.12	3.39
-5	1	3	39.7299	38.77	2.58
-5	1	2	43.2303	45.56	2.69
-5	1	0	18.5420	18.65	2.49
-5	1	-1	8.9803	8.68	4.04
-5	1	-2	19.7395	20.97	2.89
-5	1	-4	44.9299	43.83	3.09
-5	3	8	7.9855	1.83	6.21
-5	3	7	9.1975	2.69	4.64
-5	3	6	68.6610	72.40	3.75
-5	3	5	12.2029	10.64	3.36
-5	3	4	90.2368	92.25	4.59
-5	3	3	4.1012	3.82	7.83
-5	3	2	23.3882	23.69	2.64
-5	3	1	65.3087	67.25	3.62
-5	3	0	58.7501	61.58	3.34
-5	3	-1	33.9765	34.03	2.61
-5	3	-2	42.5675	43.06	2.90
-5	3	-3	29.9815	31.62	2.91
-5	3	-4	13.4013	12.02	4.34
H	K	L	Y(OBS)	Y(CALC	SIG(O)
-5	5	7	58.2791	57.48	3.49
-5	5	6	16.1811	17.08	3.90
-5	5	4	22.7537	21.12	2.68
-5	5	3	57.1007	59.55	3.26
-5	5	2	63.2082	62.66	3.47
-5	5	-1	47.2338	45.47	2.93
-5	5	-2	37.4952	37.67	2.76
-5	5	-3	17.4200	20.82	4.10
-5	5	-4	19.9483	19.29	3.35
-5	7	7	3.8111	0.00	13.71
-5	7	6	32.4643	31.78	2.86
-5	7	5	28.5896	29.96	2.88
-5	7	4	35.6493	37.46	2.79
-5	7	3	11.6104	12.55	4.01
-5	7	2	38.1224	36.79	2.70
-5	7	1	20.7884	19.07	2.83
-5	7	0	21.3602	19.97	3.43
-5	7	-1	22.8350	22.23	2.75
-5	7	-3	21.2986	21.90	3.28
-5	9	6	49.0412	47.11	3.27
-5	9	4	20.4653	20.52	3.21
-5	9	3	8.2992	10.83	5.95
-5	9	2	59.9243	59.02	3.46
-5	9	1	12.0438	14.14	4.10
-5	9	0	68.8591	69.31	3.86
-5	9	-1	9.2370	3.43	4.93
-5	9	-2	17.7849	18.79	3.51
-5	9	-3	2.4328	3.67	20.57
-5	11	5	5.5412	5.03	9.87
-5	11	4	21.4254	22.06	3.31
-5	11	3	12.1130	10.23	4.67
-5	11	2	33.6906	36.29	2.98
-5	11	0	8.5873	11.12	7.20
-5	11	-1	17.2148	18.38	3.71
-5	13	3	48.9224	50.47	3.32
-5	13	2	8.4170	8.88	7.14
-4	14	2	38.0590	38.51	3.21
-4	14	1	30.5132	28.20	3.06
-4	12	5	15.5999	16.41	4.48
-4	12	3	9.5119	10.26	6.05
-4	12	2	13.7950	21.41	5.44
-4	12	1	59.5093	58.25	3.51
-4	12	-1	26.5606	26.04	2.94
-4	12	-2	20.6326	20.78	3.29
-4	10	6	20.8544	22.18	3.67
-4	10	5	10.2976	11.01	5.23
-4	10	4	10.1689	12.00	5.28
-4	10	3	14.9797	15.38	3.66
-4	10	2	6.8803	7.39	7.24
-4	10	0	38.8947	38.52	2.90
-4	10	-2	54.0363	55.48	3.39
-4	10	-3	17.0792	17.44	3.78
-4	8	7	13.7534	17.48	4.88
-4	8	6	32.7458	30.71	2.80
-4	8	5	25.6679	26.22	2.87
-4	8	4	90.7910	91.8900	4.69
-4	8	3	36.1702	35.9341	2.69
-4	8	1	50.2393	50.2749	3.05
-4	8	-1	41.1007	40.8997	2.80
-4	8	-3	18.8771	20.6568	3.21
-4	6	7	15.7790	16.7784	3.84
-4	6	6	9.6506	12.1632	5.21
-4	6	5	21.4984	21.7246	2.77
-4	6	4	13.9547	15.0316	3.57
-4	6	3	53.7676	52.3555	3.09
-4	6	2	7.9325	7.6768	4.70
-4	6	1	99.4450	98.2437	5.00
-4	6	0	51.1327	50.4789	3.06
-4	6	-1	28.1074	29.3642	2.69
-4	6	-2	37.5708	38.0166	2.70
-4	6	-3	18.0252	18.2299	3.00
-4	6	-4	25.0461	23.3723	2.82
-4	4	8	2.2661	0.0676	26.29
-4	4	7	29.8872	28.5163	2.73
-4	4	6	20.8251	25.7801	3.44
-4	4	5	58.4580	62.1699	3.36
-4	4	3	4.9835	4.4504	6.42
-4	4	2	43.4927	42.0681	2.87
-4	4	1	69.9230	72.2728	3.68
-4	4	-1	33.7840	33.9100	2.45
-4	4	-3	81.9482	82.1885	4.33
-4	4	-5	43.4819	41.1540	3.10
-4	2	8	10.5766	9.7019	5.23
-4	2	7	26.9367	25.8405	2.73
-4	2	6	12.8498	12.5495	3.62
-4	2	5	52.4275	54.2263	3.08
-4	2	4	74.3254	77.3920	3.89
-4	2	3	36.2008	36.2612	2.42
-4	2	2	91.8446	93.0827	4.61
-4	2	1	14.4903	13.6146	2.50
-4	2	-1	21.7660	22.3001	2.36
-4	2	-2	12.8746	14.1337	3.23
-4	2	-3	31.7642	33.5029	2.59
-4	2	-4	35.1419	34.5163	2.85
-4	0	7	59.4224	60.4777	3.44
-4	0	5	77.6785	81.3626	4.07
-4	0	3	86.7413	85.7372	4.37
-4	0	1	61.6663	63.6047	3.36
-4	0	-3	37.5813	40.3157	2.79
-4	0	-5	11.0306	8.8418	4.52
-4	1	8	22.7292	21.2319	3.27
-4	1	7	6.3331	4.5197	7.28
-4	1	6	67.8050	69.3412	3.72
-4	1	5	27.8147	29.6305	2.45
-4	1	4	14.6590	14.0644	2.57
-4	1	3	14.3805	14.2055	2.43
-4	1	2	81.0598	86.3285	4.08
-4	1	1	24.5036	24.1386	2.02
-4	1	0	61.7065	62.4153	3.25
-4	1	-1	39.5632	39.5216	2.48
H	K	L	Y(OBS)	Y(CALC)	SIG(O)
-3	1	-2	18.4439	19.7949	2.36
-3	1	-3	15.5380	15.6595	2.79
-3	1	-4	27.7023	29.0328	2.64
-3	1	-6	11.3225	5.1322	4.52
-3	3	8	16.0203	14.4525	3.67
-3	3	7	40.1712	38.8064	2.93
-3	3	6	19.3932	18.3773	3.15
-3	3	5	9.3999	11.3919	4.47
-3	3	4	27.4952	29.3937	2.36
-3	3	3	45.4550	46.3479	2.96
-3	3	2	35.6735	33.3495	2.33
-3	3	1	70.0529	65.1423	3.60
-3	3	-1	34.6751	37.1452	2.35
-3	3	-2	6.9862	7.6212	4.73
-3	3	-4	12.3281	13.0161	3.99
-3	3	-5	46.0634	46.9044	3.09
-3	3	-6	13.6542	11.4320	5.14
-3	5	6	25.9830	24.7593	2.87
-3	5	5	74.9215	77.0179	4.01
-3	5	4	10.7382	12.8854	3.68
-3	5	3	74.7357	73.9086	3.87

Table 5. Ribbe (1978). Structure factors for K-235 microcline

H	K	L	Y(OBS)	Y(CALC	SIG(O)
-3	5	2	15.4248	14.46	2.52
-3	5	1	53.4723	50.54	2.96
-3	5	0	57.1299	51.60	3.10
-3	5	-1	85.9285	85.97	4.38
-3	5	-2	32.6455	32.86	2.51
-3	5	-3	54.2781	56.51	3.20
-3	5	-4	37.3709	40.23	3.29
-3	5	-5	6.8266	1.02	6.70
-3	7	7	23.2959	24.33	3.24
-3	7	6	47.1304	45.85	3.10
-3	7	5	25.2983	26.90	2.85
-3	7	3	13.2951	14.04	3.49
-3	7	2	22.9211	23.43	2.45
-3	7	1	20.5678	20.54	2.40
-3	7	0	21.9064	21.24	2.36
-3	7	-1	21.3389	20.17	2.50
-3	7	-2	35.3540	32.96	2.65
-3	7	-3	30.3773	30.23	2.70
-3	7	-4	29.8820	29.17	2.78
-3	7	-5	20.9539	22.01	3.51
-3	9	6	48.5711	50.19	3.87
-3	9	5	52.5903	54.44	3.27
-3	9	4	10.6752	5.36	4.21
-3	9	3	28.2401	28.52	4.14
-3	9	2	60.9324	61.19	3.48
-3	9	-1	4.9299	7.34	8.55
-3	9	-2	22.0160	23.23	2.99
-3	9	-3	18.9766	20.49	3.64
-3	9	-4	44.9811	47.32	3.13
-3	11	5	37.5732	38.42	3.04
-3	11	4	6.8594	5.01	7.31
-3	11	3	41.2370	42.34	3.00
-3	11	2	48.2406	47.77	3.09
-3	11	1	16.4995	17.43	3.51
H	K	L	Y(OBS)	Y(CALC	SIG(O)
-3	11	0	49.8457	52.78	4.07
-3	11	-1	27.1599	28.55	3.00
-3	11	-2	31.7802	34.67	2.88
-3	11	-3	34.3690	35.98	3.11
-3	13	4	20.0571	21.69	3.67
-3	13	3	19.6843	19.18	3.47
-3	13	2	42.7023	47.07	3.16
-3	13	1	14.1667	15.72	4.32
-3	13	0	24.5088	23.66	3.18
-3	13	-1	36.8110	36.47	2.96
-3	13	-2	21.8045	20.10	3.10
-2	14	3	40.5822	44.16	3.48
-2	14	2	37.6867	39.10	3.14
-2	14	1	40.4655	38.06	3.07
-2	14	0	26.4368	28.58	3.49
-2	12	3	9.0240	12.95	7.02
-2	12	2	2.3481	0.58	21.60
-2	12	0	38.9185	36.18	2.88
-2	12	-1	11.3077	11.41	4.72
-2	10	6	27.6589	28.99	3.15
-2	10	5	28.4497	27.42	2.94
-2	10	4	59.6083	59.02	3.49
-2	10	3	44.6718	45.87	3.00
-2	10	1	23.8960	23.53	2.81
-2	10	-1	29.8627	32.40	2.73
-2	10	-4	24.7538	30.07	3.97
-2	8	7	38.2019	38.98	3.16
-2	8	6	12.3763	10.92	4.34
-2	8	5	32.9532	33.42	2.80
-2	8	4	22.3144	22.52	2.87
-2	8	3	26.9374	26.95	2.61
-2	8	2	38.2435	38.31	2.65
-2	8	1	32.9205	34.06	2.51
-2	8	0	172.6884	165.89	8.35
-2	8	-1	11.4391	8.95	3.29
-2	8	-2	137.5939	142.78	6.76
-2	8	-3	16.6319	16.10	2.98
-2	8	-4	15.2058	15.02	3.43
-2	6	7	39.8018	38.33	3.14
-2	6	6	14.7844	19.43	4.42
-2	6	5	49.0281	48.81	3.06
-2	6	3	12.6587	13.17	3.27
-2	6	1	24.9058	25.70	2.23
-2	6	-3	35.7545	38.38	2.67
-2	6	-4	34.4097	35.63	2.80
-2	4	7	41.6832	41.27	3.03
-2	4	6	6.1153	6.49	7.31
-2	4	5	45.8723	45.79	2.86
-2	4	4	29.7953	25.40	2.32
-2	4	3	5.2665	3.05	5.84
-2	4	2	7.0567	3.39	4.21
-2	4	1	120.2482	119.77	5.86
-2	4	-1	74.3709	72.55	3.82
-2	4	-2	55.9954	55.80	3.12
-2	4	-3	102.1176	107.49	5.13
H	K	L	Y(OBS)	Y(CALC	SIG(O)
-2	4	-4	18.0602	18.55	2.83
-2	4	-5	28.5098	29.79	2.70
-2	4	-6	12.4618	11.61	4.16
-2	2	8	16.8817	17.48	4.38
-2	2	7	13.2064	8.80	4.05
-2	2	3	20.9312	22.05	2.15
-2	2	2	44.3540	46.20	2.63
-2	2	1	42.3704	40.87	2.38
-2	2	-1	32.1099	31.17	2.23
-2	2	-2	85.8577	87.02	4.38
-2	2	-3	40.7243	41.60	2.62
-2	2	-5	19.1557	18.47	3.04
-2	0	7	12.0995	12.22	4.24
-2	0	6	56.5807	55.68	3.31
-2	0	5	37.2671	37.68	2.61
-2	0	4	176.4303	182.11	8.50
-2	0	3	6.9311	11.54	4.13
-2	0	0	40.6890	42.27	2.28
-2	0	-1	13.6684	12.78	2.27
-2	0	-2	54.2919	56.53	3.00
-2	0	-3	37.1032	35.87	2.48
-2	0	-4	82.5485	84.59	4.32
-2	0	-5	33.7272	33.62	2.78
-2	0	-6	51.3922	49.40	3.26
-1	1	7	32.6831	31.84	2.91
-1	1	6	38.7385	39.53	2.80
-1	1	5	47.6783	45.06	2.92
-1	1	4	28.6246	28.07	2.27
-1	1	3	57.2100	53.13	3.08
-1	1	2	99.1184	96.98	4.85
-1	1	1	26.7288	27.02	1.72
-1	1	0	13.6498	15.43	2.14
-1	1	-1	54.1332	52.13	2.81
-1	1	-3	68.0401	69.06	3.58
-1	1	-4	67.3727	69.43	3.63
-1	1	-5	29.6604	29.80	2.61
-1	1	-6	4.9573	5.53	9.22
-1	1	-7	7.4336	4.16	6.61
-1	3	7	30.6264	29.77	2.90
-1	3	6	14.8739	15.87	3.68
-1	3	5	92.5119	92.90	4.74
-1	3	4	34.0312	31.16	2.37
-1	3	3	20.4988	21.50	2.32
-1	3	2	87.0103	78.95	4.34
-1	3	1	55.7197	52.12	2.91
-1	3	-1	132.1071	127.86	6.39
-1	3	-2	14.7237	12.28	2.32
-1	3	-3	42.7955	42.79	2.64
-1	3	-4	43.0305	44.00	2.81
-1	3	-5	3.1142	1.61	12.90
-1	3	-6	11.4810	13.41	4.94
-1	3	-7	5.0055	4.69	10.33
-1	5	7	19.9476	20.91	3.48
-1	5	5	37.5895	34.98	2.71
-1	5	4	32.3882	32.39	2.55
H	K	L	Y(OBS)	Y(CALC	SIG(O)
-1	5	3	7.4925	0.79	4.53
-1	5	1	56.0314	56.35	3.06
-1	5	-1	43.3103	45.41	2.58
-1	5	-2	36.0044	34.64	2.41
-1	5	-3	31.3764	30.24	2.40
-1	5	-4	9.2634	8.17	4.27
-1	5	-5	82.8529	84.26	4.38
-1	7	6	20.4516	23.74	3.54
-1	7	5	8.4987	4.60	5.64
-1	7	4	8.8602	8.86	4.99
-1	7	3	56.2005	56.33	3.23
-1	7	2	55.0017	53.39	3.12
-1	7	1	16.0488	10.18	2.77
-1	7	-1	22.0810	22.59	2.55
-1	7	-2	14.0842	13.65	3.00
-1	7	-3	26.6655	26.46	2.57
-1	7	-4	37.7156	39.33	2.79
-1	7	-5	15.0044	11.85	3.50

Table 5. Ribbe (1978). Structure factors for K-235 microcline.

H	K	L	Y(OBS)	Y(CALC	SIG(O)
1	1	0	13.4948	17.44	2.17
1	1	-1	27.9564	26.76	1.76
1	1	-3	58.0162	52.70	3.10
1	1	-4	34.8686	34.40	2.44
1	1	-5	43.1889	38.17	2.75
1	1	-6	33.2600	33.68	2.76
1	1	-7	30.4049	28.81	2.84
1	3	6	18.5809	16.58	3.19
H	K	L	Y(OBS)	Y(CALC	SIG(O)
1	3	4	41.6255	43.27	2.77
1	3	3	39.8054	39.08	2.54
1	3	2	10.3589	12.06	3.29
1	3	1	124.4005	123.40	6.04
1	3	-1	60.8845	56.55	3.13
1	3	-2	82.0183	76.43	4.12
1	3	-3	19.8588	18.30	2.15
1	3	-4	31.6014	30.97	2.42
1	3	-5	97.9524	99.13	4.97
1	3	-6	18.7055	18.42	2.96
1	3	-7	31.9314	30.36	2.86
1	5	5	76.3071	78.78	4.13
1	5	4	7.3259	9.67	5.84
1	5	3	31.1320	31.44	2.44
1	5	2	35.3113	35.19	2.41
1	5	1	41.8206	44.65	2.52
1	5	-1	59.6608	60.50	3.19
1	5	-3	3.5171	2.53	9.15
1	5	-4	36.9998	34.58	2.54
1	5	-5	34.7477	33.22	2.70
1	5	-7	20.0058	20.75	3.35
1	7	6	10.9617	10.67	5.32
1	7	5	13.4830	15.66	4.34
1	7	4	35.6967	36.42	2.76
1	7	3	29.5379	29.18	2.52
1	7	2	18.3328	19.77	2.59
1	7	1	26.3770	24.73	2.30
1	7	0	35.7027	18.37	2.46
1	7	-1	12.8508	12.56	3.08
1	7	-2	58.0707	56.83	3.22
1	7	-3	58.5029	58.60	3.28
1	7	-4	18.3920	17.68	2.77
1	7	-5	5.2843	4.67	8.06
1	7	-6	24.6090	23.83	2.79
1	7	-7	7.4256	0.73	6.70
1	9	5	24.0519	25.02	3.06
1	9	4	28.7840	28.11	2.77
1	9	3	12.2303	12.28	4.03
1	9	1	12.0237	6.25	3.59
1	9	-1	27.2539	25.05	2.60
1	9	-2	106.7579	95.91	5.36
1	9	-4	65.8376	68.36	3.68
1	9	-5	13.9209	12.66	3.77
1	9	-6	14.0684	14.87	4.46
1	11	4	13.0972	13.45	4.48
1	11	3	23.0465	21.62	3.03
1	11	2	47.5782	48.40	3.05
1	11	1	21.0596	19.71	3.02
1	11	0	15.2367	6.81	3.58
1	11	-1	24.7603	24.96	2.83
1	11	-3	28.1038	22.42	2.78
1	11	-4	12.1761	10.20	4.65
1	11	-5	12.0788	5.65	4.16
1	13	3	4.8057	9.69	12.21
1	13	2	26.6123	27.40	3.12
H	K	L	Y(OBS)	Y(CALC	SIG(O)
1	13	1	29.6356	30.64	3.07
1	13	0	17.0725	18.22	3.73
1	13	-1	28.3778	27.39	3.03
1	13	-3	41.4181	38.88	3.00
1	13	-4	18.3730	19.34	3.58
1	15	1	2.7826	1.72	22.25
2	14	2	33.4501	34.40	3.24
2	14	0	25.9715	27.42	3.57
2	14	-1	40.8791	39.83	3.09
2	14	-2	35.5395	38.08	3.13
2	14	-3	49.5557	53.70	3.30
2	12	3	47.9033	49.04	3.29

H	K	L	Y(OBS)	Y(CALC	SIG(O)
-1	7	-6	14.0380	12.61	4.04
-1	9	6	14.4758	16.10	4.40
-1	9	5	12.4062	12.73	4.51
-1	9	4	59.7272	60.80	3.48
-1	9	-2	20.3709	20.62	2.93
-1	9	-3	12.1536	13.26	3.85
-1	9	-4	32.5205	34.16	2.82
-1	9	-5	24.4672	24.55	2.99
-1	11	4	6.7841	12.52	8.86
-1	11	3	24.6991	20.83	3.08
-1	11	1	21.0498	19.95	3.08
-1	11	-1	22.7739	22.52	2.89
-1	11	-2	43.0291	45.96	2.98
-1	11	-3	20.6593	19.98	2.99
-1	11	-4	12.2523	11.19	4.47
-1	13	4	14.0176	17.18	5.09
-1	13	3	39.6270	38.63	3.20
-1	13	1	28.6621	24.81	3.03
-1	13	0	18.4491	11.69	3.63
-1	13	-1	37.4290	36.67	2.94
-1	13	-2	26.2485	29.20	3.15
-1	13	-3	12.0936	18.82	4.97
-1	15	1	5.9785	1.74	11.21
0	14	3	15.6340	12.61	4.29
0	14	2	39.8891	36.00	3.08
0	14	1	26.6570	26.63	3.52
0	14	-2	41.2552	35.89	3.16
0	14	-3	9.5111	11.78	6.43
0	12	3	49.5657	50.21	3.57
0	12	1	47.6459	47.36	3.17
0	12	-1	47.6024	45.53	3.10
0	12	-3	54.1658	54.52	3.60
0	10	5	13.5308	13.27	12.08
0	10	4	11.5136	12.18	5.37
0	10	2	16.9373	10.09	3.35
0	10	-2	60.0860	58.11	3.46
0	10	-5	10.7474	10.26	15.06
H	K	L	Y(OBS)	Y(CALC	SIG(O)
0	8	5	18.5316	20.92	3.56
0	8	4	91.2738	91.80	4.76
0	8	3	52.0176	53.90	3.18
0	8	-3	59.1049	58.08	3.37
0	8	-4	88.6725	92.34	4.71
0	8	-5	25.6411	25.79	2.89
0	6	7	7.1087	0.67	7.45
0	6	6	27.3666	26.16	2.95
0	6	5	22.5140	20.63	2.81
0	6	4	49.2334	50.43	3.04
0	6	3	48.7543	50.08	3.06
0	6	2	89.8312	87.72	4.53
0	6	1	59.4780	54.52	3.21
0	6	-2	98.0708	92.80	4.90
0	6	-3	52.6293	54.45	3.17
0	6	-5	26.4843	27.15	2.64
0	6	-6	25.7424	23.76	2.82
0	4	7	42.3349	40.69	3.03
0	4	6	14.0464	12.84	3.79
0	4	5	39.7549	40.30	2.77
0	4	3	82.4536	84.68	4.21
0	4	1	85.8136	83.33	4.29
0	4	-2	88.2619	88.84	4.47
0	4	-3	33.98	35.05	2.67
0	4	-6	15.	4.09	3.24
0	4	-7	38.	8.53	2.97
0	2	7	30.	0.29	3.03
0	2	6	35.6	33.69	2.75
0	2	5	36.04	38.41	2.69
0	2	4	74.3922	76.37	3.89
0	2	2	51.0313	51.83	2.80
0	2	1	16.3187	15.04	1.81
0	2	-1	11.6306	10.96	2.13
0	2	-2	52.7192	51.88	2.86
0	2	-3	8.1191	5.46	3.45
0	2	-4	78.3063	77.35	4.06
0	2	-5	41.9070	42.34	2.79
0	2	-6	31.4465	32.34	2.83
0	2	-7	37.4783	36.82	2.91
0	0	7	26.1269	28.93	4.34
0	0	-7	29.9677	28.92	3.83
1	1	7	5.5665	2.56	9.14
1	1	6	5.4016	5.98	8.36
1	1	5	31.9260	32.03	2.67
1	1	4	72.1239	73.47	3.82
1	1	3	69.7669	72.03	3.65
1	1	1	55.6978	55.93	2.89

Table 5. Ribbe (1978). Structure factors for K-235 microcline

H	K	L	Y(OBS)	Y(CALC	SIG(Y)
2	12	2	27.5312	29.11	3.01
2	12	1	17.6218	16.84	3.71
2	12	0	34.8407	31.98	2.82
2	12	-1	53.7727	54.43	3.30
2	12	-2	3.1276	7.06	14.93
2	12	-3	17.9445	17.52	3.61
2	12	-4	8.7328	9.71	5.72
2	12	-5	28.3118	28.26	2.95
2	12	3	7.1246	3.46	7.07
2	11	3	35.9644	37.05	2.79
2	11	2	2.6785	6.00	17.33
2	11	1	27.4090	28.01	2.73
2	11	0	48.0200	51.46	3.03
2	11	-1	56.5853	56.42	3.34
2	11	-2	35.0036	33.63	2.78
2	11	-3	29.2902	32.33	3.07
2	11	-4	10.4141	12.46	5.02
2	11	-5	21.5838	21.89	2.72
2	11	-6	130.9537	136.77	6.48
2	11	4	13.4676	14.20	3.26
2	10	3	170.4654	167.17	8.25
2	10	2	29.4674	28.68	2.45
2	10	1	42.8595	42.54	2.73
2	10	0	31.4419	32.05	2.51
2	10	-1	23.4548	24.22	2.68
2	10	-2	37.7956	37.50	2.80
2	10	-3	4.3855	4.96	11.11
2	10	-4	43.4414	41.62	3.12
2	10	-5	4.6497	6.58	10.25
2	10	-6	37.1168	35.99	2.78
2	10	-7	38.9369	38.60	2.64
2	10	5	9.9415	10.71	3.54
2	9	4	15.5068	17.06	2.61
2	9	3	13.8170	15.08	2.88
2	9	2	48.6018	47.19	3.01
2	9	1	19.4901	20.48	3.17
2	9	0	39.5749	36.04	3.01
2	9	-1	9.5078	10.72	5.72
2	9	-2	28.4542	29.09	2.85
2	9	-3	18.4082	17.11	2.94
2	9	-4	102.6684	106.95	5.15
2	9	-5	56.7501	57.43	3.12
2	9	-6	75.9233	77.49	3.90
2	9	-7	45.3403	38.91	2.58
2	8	6	7.1390	6.48	4.09
2	8	5	6.3916	1.69	4.38
2	8	4	47.3979	47.09	2.93
2	8	3	5.7578	5.58	7.61
2	8	2	47.3580	46.10	3.15
2	8	1	9.2099	13.69	5.81
2	8	0	36.5757	37.82	2.52
2	8	-1	29.9121	29.73	2.14
2	8	-2	49.6373	46.41	2.66
2	8	-3	47.8514	49.25	2.76
2	8	-4	20.9904	22.83	2.17
2	8	-5	9.9571	6.32	5.24
2	8	-7	52.3773	49.40	3.29
2	7	6	35.1060	33.62	2.71
2	7	5	85.3908	84.59	4.41
2	7	4	34.6519	35.87	2.48
2	7	3	54.9965	56.53	3.04
2	7	2	13.6895	12.78	2.27
2	7	1	152.5380	150.82	7.33
2	7	-2	9.6451	11.54	2.94
2	7	-3	178.1591	182.11	8.58
2	7	-4	57.7312	55.68	3.32
2	7	-6	11.4508	12.22	4.53
2	7	-7	11.7558	6.95	4.32
2	7	-8	28.4785	27.59	2.57
2	6	4	16.3540	18.08	2.83
2	6	3	19.9622	21.06	2.32
2	6	2	37.1568	37.38	2.44
2	6	1	20.9737	20.59	1.99
2	6	-1	79.2090	84.18	4.00
2	6	-2	15.0072	13.89	2.34
2	6	-3	10.5955	10.77	3.12
2	6	-4	26.4527	30.26	2.64
2	6	-5	67.3741	66.48	3.70
2	6	-6	11.9563	8.21	3.81
2	6	-7	24.7646	22.40	3.08
2	6	-8	14.9331	9.87	4.49
2	5	6	47.3731	45.97	3.09
2	5	5	13.8619	15.13	3.91
2	5	4	9.2248	10.15	3.87
3	3	3	73.2015	70.63	3.74
3	3	-1	36.5202	34.18	2.34
3	3	-2	49.4335	49.58	3.09
3	3	-3	27.7850	27.38	2.33
3	3	-4	17.1397	17.82	2.76
3	3	-5	26.6362	26.03	2.70
3	3	-6	39.4062	38.17	2.86
3	3	-7	14.7219	15.76	4.25
3	3	-8	5.5048	1.54	8.72
3	5	5	36.8037	39.93	3.38
3	5	4	51.2874	51.78	3.10
3	5	3	32.0011	33.97	2.60
3	5	2	82.6195	84.06	4.23
3	5	1	54.8181	51.84	3.03
3	5	0	54.3649	51.91	2.99
3	5	-1	18.2910	16.76	2.31
3	5	-2	71.2376	72.20	3.75
3	5	-3	10.8072	9.35	3.18
3	5	-4	78.1779	81.32	4.14
3	5	-5	20.7999	21.60	3.06
3	5	-6	7.9888	10.17	6.05
3	5	-7	14.4873	10.53	3.69
3	5	-8	23.7983	21.71	3.11
3	7	5	25.8786	25.02	2.83
3	7	4	31.3110	30.25	2.65
3	7	3	33.9715	35.62	2.67
3	7	2	19.9494	18.96	2.59
3	7	1	16.0777	15.70	2.76
3	7	0	19.2111	19.20	2.54
3	7	-1	26.2384	27.56	3.36
3	7	-2	22.2314	22.11	2.44
3	7	-3	6.6877	3.53	5.53
3	7	-4	33.0486	34.68	2.69
3	7	-5	53.1473	53.17	3.27
3	7	-6	29.8405	27.00	2.89
3	7	-7	45.2249	47.09	3.16
3	9	4	20.6032	22.14	3.60
3	9	3	30.1356	31.12	2.78
3	9	2	8.6892	9.43	5.31
3	9	1	67.4357	68.21	3.70
3	9	-2	29.4649	26.55	3.75
3	9	-3	9.4392	3.81	4.44
3	9	-4	51.3648	53.41	3.19
3	9	-5	44.7983	46.01	3.95
3	9	-6	26.5876	27.94	3.46
3	11	3	32.5454	34.09	2.96
3	11	2	26.5644	24.60	2.99
3	11	1	48.3984	51.74	4.22
3	11	0	19.4524	20.27	3.27
3	11	-1	47.2266	47.26	3.06
3	11	-2	45.3091	46.03	2.99
3	11	-3	10.4685	7.74	4.42
3	11	-4	43.5825	46.03	3.07
3	11	-5	17.4788	18.89	4.01
3	13	2	36.9262	36.64	3.08
3	13	1	27.4094	23.93	3.05
3	13	0	25.0574	23.20	2.98
3	13	-1	45.1735	47.93	3.17
3	13	-2	13.2884	13.20	4.47
3	13	-3	22.6337	21.14	3.01
3	13	-4	22.5620	23.20	3.38
3	14	-1	38.7200	36.90	3.13
3	14	-2	17.0549	19.85	4.10
4	12	2	21.6075	19.53	3.28
4	12	1	59.4958	57.00	3.50
4	12	-1	18.8285	21.31	3.64
4	12	-2	14.0917	14.34	4.25
4	12	-3	16.2985	15.33	3.98
4	12	-5	17.4553	14.22	3.65
4	10	3	51.7111	51.42	3.29
4	10	2	42.5525	41.87	2.91
4	10	0	4.1373	0.35	10.77
4	10	-1	15.9826	14.47	3.29
4	10	-2	19.1449	19.43	3.18
4	10	-3	9.8861	13.66	5.31
4	10	-4	14.2356	12.53	3.86
4	10	-5	18.0307	19.27	3.85
4	10	-6	94.2668	94.79	4.84
4	8	-4	30.9940	31.06	2.77
4	8	-5	33.4405	33.45	2.78
4	8	-6	19.3209	19.14	3.42
4	8	-7	22.9845	20.80	2.98
4	6	4			

Table 5. Ribbe (1978). Structure factors for K-23b microcline

H	K	L	Y(OBS)	Y(CALC	SIG(O)
4	6	3	18.8380	18.57	3.04
4	6	2	36.7274	36.60	2.70
4	6	1	26.9400	25.59	2.55
4	6	0	53.0303	51.58	3.08
4	6	-1	98.3003	96.99	4.95
4	6	-3	57.9909	57.29	3.27
4	6	-4	9.6572	8.61	4.57
4	6	-5	26.6607	27.55	2.62
4	6	-6	9.6734	5.52	4.46
4	6	-7	11.5145	16.30	5.22
4	4	5	39.3525	37.39	3.03
4	4	3	82.3749	81.75	4.34
4	4	2	41.3785	43.77	2.91
4	4	0	40.7297	41.54	2.68
4	2	-1	13.5223	12.41	2.62
4	2	-2	86.3079	88.01	4.38
4	2	-3	39.1961	37.67	2.49
4	2	-4	76.9637	77.81	4.00
4	2	-5	60.5226	62.15	3.38
4	2	-6	7.9905	11.15	5.30
4	0	0	121.2924	120.64	5.97
4	0	-3	93.4137	85.73	4.63
4	0	-7	9.1912	7.69	3.98
5	5	3	41.3285	39.85	2.89
5	5	-3	100.4601	95.56	5.00
5	5	1	46.7261	46.04	2.96
5	5	-2	60.2397	59.98	3.36
5	5	-3	57.1756	56.93	3.22
5	5	-4	23.9476	23.67	2.73
5	5	-2	45.5526	45.40	2.93
5	7	-3	16.9662	17.23	2.81
5	5	-4	34.9227	35.19	2.66
5	7	-5	29.5827	29.20	2.72
5	7	-6	36.3673	36.40	2.92
5	7	-7	8.9088	8.48	5.75
5	5	0	67.8785	67.86	3.80
5	9	-1	7.5327	12.14	6.35
5	5	-2	60.3120	62.58	3.47
5	9	-3	14.7449	13.15	3.30
5	5	-4	16.0712	15.95	3.63
5	9	-6	51.5480	51.70	3.35
5	5	-5	28.1807	27.17	3.22
5	11	2	20.7655	20.21	3.37
5	11	1	13.6682	12.27	4.56
5	11	0	36.4055	36.15	2.85
5	11	-2	13.6737	13.26	4.07
5	11	-3	18.1346	17.29	3.53
5	11	-4	6.5757	8.52	8.68
5	5	-1	51.0448	51.68	3.35
5	13	-3	37.2653	33.70	2.91
6	12	-1	5.2388	8.53	10.36
6	12	-2	17.0778	15.90	3.56
6	10	1	22.9565	24.55	3.14
6	10	-3	16.9114	19.51	4.01
6	10	-4	14.9998	11.17	3.75
6	10	-5	56.7606	57.78	3.40
6	8	-3	12.6579	11.76	3.85
6	8	-4	25.9313	23.62	2.91
6	8	-6	53.6003	55.05	3.46
6	8	-7	11.8460	11.44	7.24
6	6	3	16.9920	22.69	4.49
6	6	2	14.5195	15.73	3.69
6	6	1	41.2657	42.91	3.51
6	6	0	5.7908	5.98	7.12
6	6	-1	38.4349	47.84	3.81
6	6	-2	30.8845	31.04	3.40
6	6	-3	35.5571	35.57	2.89
6	6	-7	21.1581	20.70	2.96
6	4	2	71.2978	72.79	3.83
6	4	-1	27.9496	28.32	2.55
6	4	-2	16.3659	15.51	2.93
6	4	-3	41.6354	42.01	3.15
6	2	2	30.9063	31.83	2.66
6	2	1	60.1861	64.23	3.49
6	2	-1	37.7116	37.48	2.62
6	2	-2	29.8751	29.29	2.67
6	2	-5	28.2453	28.63	2.85
6	2	-6	30.8728	34.04	2.97
6	2	-7	17.9145	17.12	3.62
6	2	-8	14.9597	12.13	3.81
6	0	4	18.6679	20.34	3.11
6	0	2	38.3916	37.85	2.71
6	0	1	74.1252	81.78	4.76
6	0	0	48.8542	51.07	3.02
6	0	-1	131.0964	133.79	6.44
6	0	-2	38.5782	33.53	3.58
6	0	-3	89.7735	93.59	4.61
6	0	-4	59.9514	60.79	3.38
6	0	-5	22.0307	22.13	2.93
6	0	-7	25.8569	27.26	3.10
6	0	-8	12.0021	5.45	4.33
7	1	3	17.6331	16.53	3.35
7	1	2	9.7749	8.77	4.44
7	1	1	63.5554	64.10	3.61
7	1	0	25.1870	26.99	2.60
7	1	-2	20.3017	17.74	2.57
7	1	-3	37.6354	38.34	2.77
7	1	-4	10.8985	6.56	3.78
7	1	-5	29.9029	30.11	2.71
7	1	-6	15.7466	17.93	3.88
7	1	-7	32.3047	30.73	2.82
7	3	2	10.9563	8.98	4.06
7	3	1	49.6600	48.12	3.13
7	3	0	28.6913	27.74	2.68
7	3	-1	46.7713	46.64	2.97
7	3	-2	61.9249	62.83	3.49
7	3	-3	27.7294	28.83	2.65
7	3	-4	25.0097	24.01	2.78
7	3	-5	7.2765	4.71	6.00
7	3	-6	50.1561	49.31	3.18
7	3	-7	16.2191	16.30	3.63
7	5	2	26.9104	26.80	2.95
7	5	1	10.5498	11.24	4.96
7	5	0	40.4072	38.73	2.87
7	5	-1	7.2405	7.12	5.96
7	5	-2	79.6055	79.85	4.24
7	5	-3	24.2102	22.74	2.73
7	5	-4	20.0660	20.82	3.02
7	5	-5	19.2912	19.34	3.22
7	5	-6	17.6839	13.44	3.37
7	5	-7	12.3888	8.88	4.28
7	7	1	26.0084	26.41	4.93
7	7	0	6.0823	4.26	7.10
7	7	-2	22.6159	22.13	2.96
7	7	-3	30.3471	29.76	3.29
7	7	-4	1.9389	3.30	25.26
7	7	-5	17.6076	21.30	3.93
7	7	-6	8.8432	12.16	6.17
7	9	-1	24.6555	26.93	2.92
7	9	-3	56.3377	55.96	3.49
7	9	-4	12.3750	13.67	4.54
7	9	-5	13.3300	12.19	4.49
7	11	-2	51.7541	53.14	3.40
7	11	-3	22.9199	23.53	3.25
8	8	-1	36.8372	35.71	2.90
8	8	-3	30.6538	29.32	2.89
8	8	-5	19.2054	18.21	3.60
8	6	0	38.4108	37.70	2.97
8	6	-1	3.0633	4.88	14.95
8	6	-3	17.8036	15.59	3.12
8	6	-4	5.9585	9.27	8.98
8	6	-6	56.4377	54.61	3.51
8	4	1	22.3717	23.55	3.06
8	4	-1	21.3254	22.07	3.24
8	4	-2	19.8021	17.84	3.01
8	4	-3	38.0607	37.25	2.91
8	4	-5	7.5594	6.33	6.24
8	2	1	18.6922	17.59	3.36
8	2	0	10.2511	9.61	4.90
8	2	-1	30.1125	30.07	2.86
8	2	-2	38.5274	39.22	2.87
8	2	-3	11.1730	10.08	4.06
8	2	-4	45.6262	45.33	3.04
8	2	-5	19.0533	17.44	3.16
8	2	-6	16.0771	20.08	4.15
8	2	-7	9.7573	5.51	5.06
8	0	1	33.1014	35.22	3.48
8	0	-1	32.3924	32.00	2.75
8	0	-3	49.9756	49.71	3.17
8	0	-5	38.8491	40.58	3.09
8	0	-7	27.0513	24.57	3.13
9	1	0	11.4291	9.76	4.93
9	1	-1	10.9365	8.66	4.57
9	1	-2	13.3168	9.75	3.82
9	1	-3			