

Crystallography. — Calculation of the stereographic pole figure of the cubic lattice for any given direction [HKL]. II. By W. MAY. (Communicated by Prof. J. M. BURGERS.)

(Communicated at the meeting of March 29, 1947.)

5. Explanation of the tables.

As was remarked in section 1, in the case of the cubic face-centered lattice it is sufficient to construct the standard projections for the [110]~, [001]~, [112]~, [130]~ and [111]-direction. These projections were calculated for a radius R of 10 cm with an accuracy in the coordinates of every point of 0.1 mm, which is better than can be achieved in plotting these distances.

The choice of the planes for which the coordinates are calculated is directly dependant on the fact that the projections are intended for the cubic face-centered lattice. In the following tables only those planes with $\sum h^2 \leq 56$ ⁴⁾ and indices all even or odd are present, but every set of indices has been reduced to the simplest form as in LAUE photographs different orders are superimposed. In the projections of SCHIEBOLD and SACHS the size of the spots gives an indication of the intensity of the X-ray reflections from the planes. It seems to us that the smallest possible spots are preferable; the important poles (<{100}, {110} and {111}) can be indicated in the usual way. This procedure is also used by BARRETT in his book²⁾.

In the tables⁵⁾ are recorded the coordinates x and y in mm for every pole. In the heading of each table is given:

- the indices of the projection direction;
- the equations for x and y as calculated from the general equations (5) of section 4 for the special case;
- a schematic representation of the axes (the positive part of each axis is indicated by an arrow), the indices of the pole at the centre and of the poles at the points of intersection of the axes and the reference circle.

In the tables the sets of indices of poles lying on the reference circle are preceded by !

Finally it must be remarked that the standard projection [001] cannot be calculated from the general equations (5), as the equations (4) for

⁴⁾ Planes with $\sum h^2 > 56$ seldom, if ever, appear on an ordinary LAUE photograph, at least in our experience with aluminium single crystals.

⁵⁾ Typographical reasons made it impossible to denote negative indices in the usual way, i.e. by a bar over the index. In the present tables the negative indices differ from the positive ones by a fatter print.

X and Y are reduced to $\frac{1}{2}$. For this special case it is assumed that: $X = k$, $Y = -h$.

The author takes here the opportunity to express his sincerest thanks to Professor dr. W. G. BURGERS for the interest and the invaluable assistance, received in many discussions.

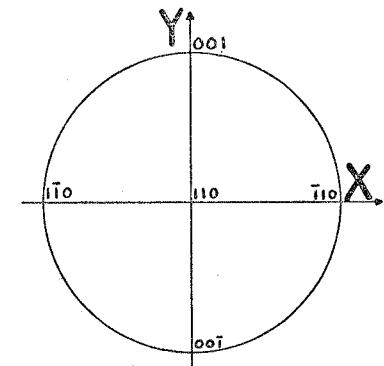
Laboratory for physical chemistry,
Technical University, Delft.

[110].

$$x = \frac{100(k-h)}{\sqrt{2}\sum h^2 + h + k} \text{ mm}$$

$$y = \frac{100l\sqrt{2}}{\sqrt{2}\sum h^2 + h + k} \text{ mm}$$

! means that the pole with this set of indices lies on the reference circle.



$(h k l)$	x	y	$(h k l)$	x	y
! 0 0 1	0.0	+ 100.0	0 1 2	+ 24.0	+ 68.0
! 0 0 1	0.0	- 100.0	0 1 2	+ 24.0	- 68.0
0 1 0	+ 41.4	0.0	1 0 2	- 24.0	+ 68.0
1 0 0	- 41.4	0.0	1 0 2	- 24.0	- 68.0
			0 2 1	+ 38.7	+ 27.4
1 1 0	0.0	0.0	0 2 1	+ 38.7	- 27.4
0 1 1	+ 33.3	+ 47.1	2 0 1	- 38.7	+ 27.4
0 1 1	+ 33.3	- 47.1	2 0 1	- 38.7	- 27.4
1 0 1	- 33.3	+ 47.1	1 2 0	+ 72.1	0.0
1 0 1	- 33.3	- 47.1	2 1 0	- 72.1	0.0
! 1 1 0	+ 100.0	0.0			
! 1 1 0	- 100.0	0.0	1 1 2	0.0	+ 51.8
			1 1 2	0.0	- 51.8
1 1 1	0.0	+ 31.8	1 2 1	+ 15.5	+ 21.9
1 1 1	0.0	- 31.8	1 2 1	+ 15.5	- 21.9
! 1 1 1	+ 81.6	+ 57.7	2 1 1	- 15.5	+ 21.9
! 1 1 1	+ 81.6	- 57.7	2 1 1	- 15.5	- 21.9
! 1 1 1	- 81.6	+ 57.7	! 1 1 2	+ 57.7	+ 81.6
! 1 1 1	- 81.6	- 57.7	! 1 1 2	+ 57.7	- 81.6
1 2 0	+ 16.2	0.0	! 1 1 2	- 57.7	+ 81.6
2 1 0	- 16.2	0.0	! 1 1 2	- 57.7	- 81.6
			1 2 1	+ 67.2	+ 31.7

$(h k l)$	x	y	$(h k l)$	x	y
1 2 1	+	67.2	—	31.7	
2 1 1	—	67.2	+	31.7	
2 1 1	—	67.2	—	31.7	
2 2 1		0.0	+	17.2	
2 2 1		0.0	—	17.2	
1 2 2	+	13.8	+	39.1	
1 2 2	+	13.8	—	39.1	
2 1 2	—	13.8	+	39.1	
2 1 2	—	13.8	—	39.1	
1 2 2	+	57.2	+	54.0	
1 2 2	+	57.2	—	54.0	
2 1 2	—	57.2	+	54.0	
2 1 2	—	57.2	—	54.0	
! 2 2 1	+	94.3	+	33.3	
! 2 2 1	+	94.3	—	33.3	
! 2 2 1	—	94.3	+	33.3	
! 2 2 1	—	94.3	—	33.3	
0 1 3	+	18.3	+	77.5	
0 1 3	+	18.3	—	77.5	
1 0 3	—	18.3	+	77.5	
1 0 3	—	18.3	—	77.5	
1 3 0	+	23.6		0.0	
3 1 0	—	23.6		0.0	
0 3 1	+	40.1	+	18.9	
0 3 1	+	40.1	—	18.9	
3 0 1	—	40.1	+	18.9	
3 0 1	—	40.1	—	18.9	
1 3 0	+	61.8		0.0	
3 1 0	—	61.8		0.0	
1 1 3		0.0	+	63.4	
1 1 3		0.0	—	63.4	
1 3 1	+	23.0	+	16.3	
1 3 1	+	23.0	—	16.3	
3 1 1	—	23.0	+	16.3	
3 1 1	—	23.0	—	16.3	
! 1 1 3	+	42.6	+	90.5	
! 1 1 3	+	42.6	—	90.5	
! 1 1 3	—	42.6	+	90.5	
! 1 1 3	—	42.6	—	90.5	
1 3 1	+	59.8	+	21.1	
1 3 1	+	59.8	—	21.1	
3 1 1	—	59.8	+	21.1	
3 1 1	—	59.8	—	21.1	
2 3 0	+	9.9		0.0	
3 2 0	—	9.9		0.0	
0 2 3	+	28.2	+	59.8	
0 2 3	+	28.2	—	59.8	

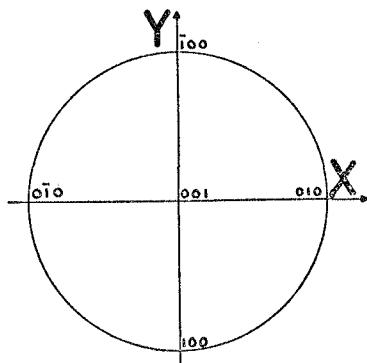
$(h k l)$	x	y	$(h k l)$	x	y
! 1 1 5	+	27.2	+	96.2	
! 1 1 5	+	27.2	-	96.2	
! 1 1 5	-	27.2	+	96.2	
! 1 1 5	-	27.2	-	96.2	
1 5 1	+	30.0	+	10.6	
1 5 1	+	30.0	-	10.6	
5 1 1	-	30.0	+	10.6	
5 1 1	-	30.0	-	10.6	
1 5 1	+	52.9	+	12.5	
1 5 1	+	52.9	-	12.5	
5 1 1	-	52.9	+	12.5	
5 1 1	-	52.9	-	12.5	
			1 1 7	0.0	+
3 5 1	+	12.2	+	8.6	
3 5 1	+	12.2	-	8.6	
5 3 1	-	12.2	+	8.6	
5 3 1	-	12.2	-	8.6	
1 3 5	+	16.2	+	57.2	
1 3 5	+	16.2	-	57.2	
3 1 5	-	16.2	+	57.2	
3 1 5	-	16.2	-	57.2	
1 5 3	+	27.8	+	29.5	
1 5 3	+	27.8	-	29.5	
5 1 3	-	27.8	+	29.5	
5 1 3	-	27.8	-	29.5	
1 3 5	+	38.6	+	68.2	
1 3 5	+	38.6	-	68.2	
3 1 5	-	38.6	+	68.2	
3 1 5	-	38.6	-	68.2	
1 5 3	+	48.5	+	34.3	
1 5 3	+	48.5	-	34.3	
5 1 3	-	48.5	+	34.3	
5 1 3	-	48.5	-	34.3	
3 5 1	+	77.2	+	13.6	
3 5 1	+	77.2	-	13.6	
5 3 1	-	77.2	+	13.6	
5 3 1	-	77.2	-	13.6	
			5 5 1	0.0	+
3 3 5		0.0	+	46.3	
3 3 5		0.0	-	46.3	
3 5 3	+	11.6	+	24.6	
			5 5 1	99.0	+
			5 5 1	99.0	-
			5 5 1	99.0	+
			5 5 1	99.0	-

[0 0 1].

$$x = \frac{100k}{\sqrt{\sum h^2 + l}} \text{ mm}$$

$$y = \frac{-100h}{\sqrt{\sum h^2 + l}} \text{ mm}$$

! means that the pole with this set of indices lies on the reference circle.

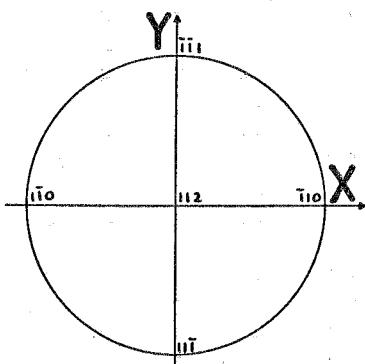


$(h k l)$	x	y	$(h k l)$	x	y
0 0 1	0.0	0.0	1 1 2	+ 22.5	+ 22.5
! 1 0 0	0.0	+ 100.0	1 1 2	+ 22.5	- 22.5
! 1 0 0	0.0	- 100.0	1 1 2	- 22.5	+ 22.5
! 0 1 0	+ 100.0	0.0	1 1 2	- 22.5	- 22.5
! 0 1 0	- 100.0	0.0	2 1 1	+ 29.0	+ 58.0
			2 1 1	+ 29.0	- 58.0
1 0 1	0.0	+ 41.4	2 1 1	- 29.0	+ 58.0
1 0 1	0.0	- 41.4	2 1 1	- 29.0	- 58.0
0 1 1	+ 41.4	0.0	1 2 1	+ 58.0	+ 29.0
0 1 1	- 41.4	0.0	1 2 1	+ 58.0	- 29.0
! 1 1 0	+ 70.7	+ 70.7	1 2 1	- 58.0	+ 29.0
! 1 1 0	+ 70.7	- 70.7	1 2 1	- 58.0	- 29.0
! 1 1 0	- 70.7	+ 70.7	2 1 2	+ 20.0	+ 40.0
! 1 1 0	- 70.7	- 70.7	2 1 2	+ 20.0	- 40.0
1 1 1	+ 36.6	+ 36.6	2 1 2	- 20.0	+ 40.0
1 1 1	+ 36.6	- 36.6	2 1 2	- 20.0	- 40.0
1 1 1	- 36.6	+ 36.6	1 2 2	+ 40.0	+ 20.0
1 1 1	- 36.6	- 36.6	1 2 2	+ 40.0	- 20.0
1 0 2	0.0	+ 23.6	1 2 2	- 40.0	+ 20.0
1 0 2	0.0	- 23.6	2 2 1	+ 50.0	+ 50.0
2 0 1	0.0	+ 61.8	2 2 1	+ 50.0	- 50.0
2 0 1	0.0	- 61.8	2 2 1	- 50.0	+ 50.0
0 1 2	+ 23.6	0.0	2 2 1	- 50.0	- 50.0
0 1 2	- 23.6	0.0			
! 2 1 0	+ 44.7	+ 89.4	1 0 3	0.0	+ 16.2
! 2 1 0	+ 44.7	- 89.4	1 0 3	0.0	- 16.2
! 2 1 0	- 44.7	+ 89.4	3 0 1	0.0	+ 72.1
! 2 1 0	- 44.7	- 89.4	3 0 1	0.0	- 72.1
0 2 1	+ 61.8	0.0	0 1 3	+ 16.2	0.0
0 2 1	- 61.8	0.0	0 1 3	- 16.2	0.0
! 1 2 0	+ 89.4	+ 44.7	! 3 1 0	+ 31.6	+ 94.9
! 1 2 0	+ 89.4	- 44.7	! 3 1 0	+ 31.6	- 94.9
! 1 2 0	- 89.4	+ 44.7	! 3 1 0	- 31.6	+ 94.9
! 1 2 0	- 89.4	- 44.7	! 3 1 0	- 31.6	- 94.9

$(h k l)$	x	y	$(h k l)$	x	y	
0 3 1	+	72.1	0.0	3 2 1	- 42.2	+ 63.3
0 3 1	-	72.1	0.0	3 2 1	- 42.2	- 63.3
! 1 3 0	+	94.9	+ 31.6	1 3 2	+ 52.2	+ 17.4
! 1 3 0	+	94.9	- 31.6	1 3 2	+ 52.2	- 17.4
! 1 3 0	-	94.9	+ 31.6	1 3 2	- 52.2	+ 17.4
! 1 3 0	-	94.9	- 31.6	1 3 2	- 52.2	- 17.4
1 1 3	+	15.8	+ 15.8	2 3 1	+ 63.3	+ 42.2
1 1 3	+	15.8	- 15.8	2 3 1	- 63.3	+ 42.2
1 1 3	-	15.8	+ 15.8	2 3 1	- 63.3	- 42.2
1 1 3	-	15.8	- 15.8	3 1 3	+ 13.6	+ 40.8
3 1 1	+	23.2	+ 69.5	3 1 3	+ 13.6	- 40.8
3 1 1	+	23.2	- 69.5	3 1 3	- 13.6	+ 40.8
3 1 1	-	23.2	+ 69.5	3 1 3	- 13.6	- 40.8
1 3 1	+	69.5	+ 23.2	1 3 3	+ 40.8	+ 13.6
1 3 1	+	69.5	- 23.2	1 3 3	+ 40.8	- 13.6
1 3 1	-	69.5	+ 23.2	1 3 3	- 40.8	+ 13.6
1 3 1	-	69.5	- 23.2	3 3 1	+ 56.0	+ 56.0
2 0 3	0.0	+ 30.3	3 3 1	+ 56.0	- 56.0	
2 0 3	0.0	- 30.3	3 3 1	- 56.0	+ 56.0	
3 0 2	0.0	+ 53.5	3 3 1	- 56.0	- 56.0	
3 0 2	0.0	- 53.5	3 3 1	- 56.0	+ 56.0	
0 2 3	+	30.3	0.0	1 1 5	+ 9.8	+ 9.8
0 2 3	-	30.3	0.0	1 1 5	+ 9.8	- 9.8
0 3 2	+	53.5	0.0	1 1 5	- 9.8	+ 9.8
0 3 2	-	53.5	0.0	1 1 5	- 9.8	- 9.8
! 3 2 0	+	55.5	+ 83.2	5 1 1	+ 16.1	+ 80.7
! 3 2 0	+	55.5	- 83.2	5 1 1	+ 16.1	- 80.7
! 3 2 0	-	55.5	+ 83.2	5 1 1	- 16.1	+ 80.7
! 3 2 0	-	55.5	- 83.2	5 1 1	- 16.1	- 80.7
! 3 2 0	+	83.2	+ 55.5	1 5 1	+ 80.7	+ 16.1
! 2 3 0	+	83.2	- 55.5	1 5 1	+ 80.7	- 16.1
! 2 3 0	-	83.2	+ 55.5	1 5 1	- 80.7	+ 16.1
! 2 3 0	-	83.2	- 55.5	1 5 1	- 80.7	- 16.1
2 1 3	+	14.8	+ 29.7	3 1 5	+ 9.2	+ 27.5
2 1 3	+	14.8	- 29.7	3 1 5	+ 9.2	- 27.5
2 1 3	-	14.8	+ 29.7	3 1 5	- 9.2	+ 27.5
2 1 3	-	14.8	- 29.7	3 1 5	- 9.2	- 27.5
3 1 2	+	17.4	+ 52.2	5 1 3	+ 11.2	+ 56.1
3 1 2	+	17.4	- 52.2	5 1 3	+ 11.2	- 56.1
3 1 2	-	17.4	+ 52.2	5 1 3	- 11.2	+ 56.1
3 1 2	-	17.4	- 52.2	5 1 3	- 11.2	- 56.1
1 2 3	+	29.7	+ 14.8	1 3 5	+ 27.5	+ 9.2
1 2 3	+	29.7	- 14.8	1 3 5	+ 27.5	- 9.2
1 2 3	-	29.7	+ 14.8	1 3 5	- 27.5	+ 9.2
1 2 3	-	29.7	- 14.8	1 3 5	- 27.5	- 9.2
3 2 1	+	42.2	+ 63.3	5 3 1	+ 43.4	+ 72.3
3 2 1	+	42.2	- 63.3	5 3 1	+ 43.4	- 72.3
3 2 1	-	42.2	+ 63.3	5 3 1	- 43.4	+ 72.3

$(h k l)$	x	y	$(h k l)$	x	y
5 3 1	— 43.4	+ 72.3	1 1 7	+ 7.1	— 7.1
5 3 1	— 43.4	— 72.3	1 1 7	— 7.1	+ 7.1
1 5 3	+ 56.1	+ 11.2	1 1 7	— 7.1	— 7.1
1 5 3	+ 56.1	— 11.2	7 1 1	+ 12.3	+ 86.0
1 5 3	— 56.1	+ 11.2	7 1 1	+ 12.3	— 86.0
1 5 3	— 56.1	— 11.2	7 1 1	— 12.3	+ 86.0
3 5 1	+ 72.3	+ 43.4	7 1 1	— 12.3	— 86.0
3 5 1	+ 72.3	— 43.4	1 7 1	+ 86.0	+ 12.3
3 5 1	— 72.3	+ 43.4	1 7 1	+ 86.0	— 12.3
3 5 1	— 72.3	— 43.4	1 7 1	— 86.0	+ 12.3
			1 7 1	— 86.0	— 12.3
3 3 5	+ 26.0	+ 26.0			
3 3 5	+ 26.0	— 26.0	5 1 5	+ 8.2	+ 41.2
3 3 5	— 26.0	+ 26.0	5 1 5	+ 8.2	— 41.2
3 3 5	— 26.0	— 26.0	5 1 5	— 8.2	+ 41.2
5 3 3	+ 31.4	+ 52.3	5 1 5	— 8.2	— 41.2
5 3 3	+ 31.4	— 52.3	1 5 5	+ 41.2	+ 8.2
5 3 3	— 31.4	+ 52.3	1 5 5	+ 41.2	— 8.2
5 3 3	— 31.4	— 52.3	1 5 5	— 41.2	+ 8.2
3 5 3	+ 52.3	+ 31.4	1 5 5	— 41.2	— 8.2
3 5 3	+ 52.3	— 31.4	5 5 1	+ 61.4	+ 61.4
3 5 3	— 52.3	+ 31.4	5 5 1	+ 61.4	— 61.4
3 5 3	— 52.3	— 31.4	5 5 1	— 61.4	+ 61.4
			5 5 1	— 61.4	— 61.4
1 1 7	+ 7.1	+ 7.1			

[1 1 2].



$$x = \frac{100(k-h) \cdot \sqrt{3}}{\sqrt{6} \sum h^2 + h + k + 2l} \text{ mm}$$

$$y = \frac{100(l-h-k) \cdot \sqrt{2}}{\sqrt{6} \sum h^2 + h + k + 2l} \text{ mm}$$

! means that the pole with this set of indices lies on the reference circle.

$(h k l)$	x	y	$(h k l)$	x	y
0 0 1	0.0	+ 31.8	1 0 1	+ 38.8	+ 63.4
0 1 0	+ 50.2	— 41.0	0 1 1	— 38.8	+ 63.4
1 0 0	— 50.2	— 41.0	! 1 1 0	+ 100.0	0.0
			! 1 1 0	— 100.0	0.0
1 1 0	0.0	— 51.8	1 1 1	0.0	— 17.2
0 1 1	+ 26.8	0.0	! 1 1 1	0.0	+ 100.0
1 0 1	— 26.8	0.0			

$(h k l)$	x	y	$(h k l)$	x	y
! 1 1 1	0.0	— 100.0	0 3 1	+ 40.8	— 22.2
1 1 1	+ 55.5	+ 22.7	3 0 1	— 40.8	— 22.2
1 1 1	— 55.5	+ 22.7	0 3 1	+ 59.4	— 64.7
0 1 2	+ 16.5	+ 13.5	3 0 1	— 59.4	— 64.7
1 0 2	— 16.5	+ 13.5	3 1 0	— 71.1	— 29.0
1 0 2	+ 20.4	+ 50.0			
0 1 2	— 20.4	+ 50.0	1 1 3	0.0	+ 8.8
1 2 0	+ 20.4	— 50.0	1 1 3	0.0	+ 58.3
2 1 0	— 20.4	— 50.0	1 1 3	+ 24.5	+ 30.0
0 2 1	+ 36.6	— 14.9	1 1 3	— 24.5	+ 30.0
2 0 1	— 36.6	— 14.9	1 3 1	+ 24.5	— 30.0
! 2 0 1	+ 63.2	+ 77.5	3 1 1	— 24.5	— 30.0
! 0 2 1	— 63.2	+ 77.5	1 3 1	+ 34.2	— 69.8
! 0 2 1	+ 63.2	— 77.5	3 1 1	— 34.2	— 69.8
! 2 0 1	— 63.2	— 77.5	1 3 1	+ 57.1	— 11.7
1 2 0	+ 80.2	— 21.8	3 1 1	— 57.1	— 11.7
2 1 0	— 80.2	— 21.8	! 3 1 1	+ 85.3	+ 52.2
			! 1 3 1	— 85.3	+ 52.2
1 1 2	0.0	0.0	! 1 3 1	+ 85.3	— 52.2
1 1 2	0.0	+ 70.7	! 3 1 1	— 85.3	— 52.2
1 2 1	+ 15.7	— 25.7	2 3 0	+ 12.5	— 51.1
2 1 1	— 15.7	— 25.7	3 2 0	— 12.5	— 51.1
1 2 1	+ 24.7	— 80.8	0 2 3	+ 20.6	+ 8.4
2 1 1	— 24.7	— 80.8	2 0 3	— 20.6	+ 8.4
1 1 2	+ 34.6	+ 28.3	2 0 3	+ 27.0	+ 55.1
1 1 2	— 34.6	+ 28.3	0 2 3	— 27.0	+ 55.1
1 2 1	+ 57.7	0.0	0 3 2	+ 32.8	— 8.9
2 1 1	— 57.7	0.0	3 0 2	— 32.8	— 8.9
2 1 1	+ 74.2	+ 40.4	3 0 2	+ 52.9	+ 71.9
1 2 1	— 74.2	+ 40.4	0 3 2	— 52.9	+ 71.9
2 2 1	0.0	— 31.8	2 3 0	+ 88.1	— 14.4
2 2 1	0.0	— 75.6	3 2 0	— 88.1	— 14.4
1 2 2	+ 12.1	— 9.9			
2 1 2	— 12.1	— 9.9	1 2 3	+ 9.5	0.0
2 1 2	+ 20.7	+ 84.7	2 1 3	— 9.5	0.0
1 2 2	— 20.7	+ 84.7	2 3 1	+ 10.7	— 35.0
1 2 2	+ 42.1	+ 11.5	3 2 1	— 10.7	— 35.0
2 1 2	— 42.1	+ 11.5	2 1 3	+ 14.2	+ 69.8
2 1 2	+ 50.2	+ 41.0	1 2 3	— 14.2	+ 69.8
1 2 2	— 50.2	+ 41.0	2 3 1	+ 14.2	— 69.8
2 2 1	+ 74.1	+ 15.1	3 2 1	— 14.2	— 69.8
2 2 1	— 74.1	+ 15.1	1 3 2	+ 20.2	— 16.5
			3 1 2	— 20.2	— 16.5
0 1 3	+ 11.7	+ 19.2	1 2 3	+ 32.1	+ 17.5
1 0 3	— 11.7	+ 19.2	2 1 3	— 32.1	+ 17.5
1 0 3	+ 13.6	+ 44.4	2 1 3	+ 36.7	+ 39.9
0 1 3	— 13.6	+ 44.4	1 2 3	— 36.7	+ 39.9
1 3 0	+ 29.5	— 48.2	! 3 1 2	+ 37.8	+ 92.6
3 1 0	— 29.5	— 48.2	! 1 3 2	— 37.8	+ 92.6

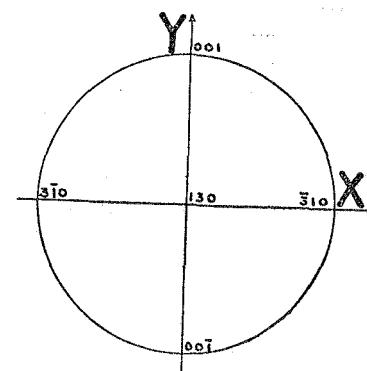
$(h k l)$	x	y	$(h k l)$	x	y
! 1 3 2	+	37.8	—	92.6	
! 3 1 2	—	37.8	—	92.6	
1 3 2	+	45.7	0.0		
3 1 2	—	45.7	0.0		
3 1 2	+	62.1	+	50.7	
1 3 2	—	62.1	+	50.7	
2 3 1	+	71.2	0.0		
3 2 1	—	71.2	0.0		
3 2 1	+	85.2	+	27.8	
2 3 1	—	85.2	+	27.8	
3 3 1		0.0	—	37.9	
3 3 1		0.0	—	67.4	
1 3 3	+	16.8	—	6.8	
3 1 3	—	16.8	—	6.8	
3 1 3	+	27.3	+	78.1	
1 3 3	—	27.3	+	78.1	
1 3 3	+	37.1	+	7.6	
3 1 3	—	37.1	+	7.6	
3 1 3	+	47.2	+	48.2	
1 3 3	—	47.2	+	48.2	
3 3 1	+	82.0	+	11.2	
3 3 1	—	82.0	+	11.2	
1 1 5		0.0	+	17.2	
1 1 5		0.0	+	47.8	
1 1 5	+	15.2	+	31.1	
1 1 5	—	15.2	+	31.1	
1 5 1	+	33.4	—	34.1	
5 1 1	—	33.4	—	34.1	
1 5 1	+	41.4	—	59.2	
5 1 1	—	41.4	—	59.2	
1 5 1	+	55.5	—	22.7	
5 1 1	—	55.5	—	22.7	
1 5 1	+	70.6	—	48.0	
5 1 1	—	70.6	—	48.0	
1 3 5	+	12.2	+	5.0	
3 1 5	—	12.2	+	5.0	
3 5 1	+	14.1	—	40.4	
5 3 1	—	14.1	—	40.4	
3 1 5	+	16.9	+	62.1	
1 3 5	—	16.9	+	62.1	
3 5 1	+	16.9	—	62.1	
5 3 1	—	16.9	—	62.1	
1 3 5	+	26.2	+	16.0	
3 1 5	—	26.2	+	16.0	
1 5 3	+	26.2	—	16.0	
5 1 3	—	26.2	—	16.0	
3 1 5	+	30.8	+	44.0	
1 3 5	—	30.8	+	44.0	
1 5 3	+	42.4	—	5.8	
			5 5 1	—	88.9
			5 5 1	—	88.9

I1 3 0 I.

$$x = \frac{100(k-3h)}{\sqrt{10\sum h^2 + h + 3k}} \text{ mm}$$

$$y = \frac{100l\sqrt{10}}{\sqrt{10\sum h^2 + h + 3k}} \text{ mm}$$

! means that the pole with this set of indices lies on the reference circle.



$(h k l)$	x	y	$(h k l)$	x	y		
1 0 0	—	72.1	0.0	1 2 1	—	6.8	
! 0 0 1	0.0	+	100.0	1 2 1	+	39.2	
! 0 0 1	0.0	—	100.0	1 2 1	+	39.2	
0 1 0	+	16.2	0.0	1 1 2	+	41.0	
1 0 1	—	54.8	+	57.8	1 1 2	+	41.0
1 0 1	—	54.8	—	57.8	2 1 1	+	80.0
1 1 0	—	23.6	0.0	2 1 1	+	80.0	
0 1 1	+	13.4	+	42.3	2 1 2	—	34.5
0 1 1	+	13.4	—	42.3	2 1 2	—	34.5
1 1 0	+	61.8	0.0	2 2 1	—	22.9	
1 1 1	—	21.1	+	33.4	1 2 2	—	6.1
1 1 1	—	21.1	—	33.4	1 2 2	—	6.1
1 1 1	+	53.5	+	42.3	1 2 2	+	34.5
1 1 1	+	53.5	—	42.3	1 2 2	+	34.5
2 0 1	—	66.1	+	34.9	2 2 1	+	59.3
2 0 1	—	66.1	—	34.9	2 2 1	+	59.3
2 1 0	—	41.4	0.0	2 1 2	+	66.8	
1 0 2	—	37.2	+	78.4	2 1 2	+	66.8
1 0 2	—	37.2	—	78.4	! 3 1 0	—	100.0
1 2 0	—	7.1	0.0	3 0 1	—	69.2	
0 1 2	+	9.9	+	62.8	3 0 1	—	69.2
0 1 2	+	9.9	—	62.8	3 1 0	—	50.0
0 2 1	+	15.3	+	24.2	1 0 3	—	27.3
0 2 1	+	15.3	—	24.2	1 0 3	—	27.3
1 2 0	+	41.4	0.0	1 3 0	0.0	0.0	
2 1 0	+	86.7	0.0	0 1 3	+	7.7	
2 1 1	—	39.2	+	24.8	0 1 3	+	7.7
2 1 1	—	39.2	—	24.8	0 3 1	+	15.8
1 1 2	—	17.0	+	53.8	0 3 1	+	15.8
1 1 2	—	17.0	—	53.8	1 3 0	+	33.3
1 2 1	—	6.8	+	21.4	! 3 1 0	+	100.0

$(h k l)$	x	y	$(h k l)$	x	y
! 3 1 1	— 95.3	+ 30.2	3 2 1	+ 74.2	— 21.3
! 3 1 1	— 95.3	— 30.2	! 3 1 2	+ 84.5	+ 53.5
3 1 1	— 48.5	+ 19.2	! 3 1 2	+ 84.5	— 53.5
3 1 1	— 48.5	— 19.2			
1 1 3	— 13.8	+ 65.5	! 3 1 3	— 72.5	+ 68.8
1 1 3	— 13.8	— 65.5	! 3 1 3	— 72.5	— 68.8
1 3 1	0.0	+ 15.4	3 1 3	— 40.4	+ 48.0
1 3 1	0.0	— 15.4	3 1 3	— 40.4	— 48.0
1 1 3	+ 32.0	+ 76.0	3 3 1	— 23.3	+ 12.3
1 1 3	+ 32.0	— 76.0	3 3 1	— 23.3	— 12.3
1 3 1	+ 32.5	+ 17.1	1 3 3	0.0	+ 39.9
1 3 1	+ 32.5	— 17.1	1 3 3	0.0	— 39.9
! 3 1 1	+ 95.3	+ 30.2	1 3 3	+ 27.5	+ 43.5
! 3 1 1	+ 95.3	— 30.2	1 3 3	+ 27.5	— 43.5
			3 3 1	+ 60.7	+ 16.0
3 0 2	— 62.5	+ 43.9	3 3 1	+ 60.7	— 16.0
3 0 2	— 62.5	— 43.9	! 3 1 3	+ 72.5	+ 68.8
2 0 3	— 44.8	+ 70.8	! 3 1 3	+ 72.5	— 68.8
2 0 3	— 44.8	— 70.8			
3 2 0	— 34.3	0.0	5 1 1	— 86.8	+ 17.2
2 3 0	— 13.4	0.0	5 1 1	— 86.8	— 17.2
0 2 3	+ 11.5	+ 54.5	5 1 1	— 57.3	+ 12.9
0 2 3	+ 11.5	— 54.5	5 1 1	— 57.3	— 12.9
0 3 2	+ 14.7	+ 31.0	1 1 5	— 9.8	+ 77.4
0 3 2	+ 14.7	— 31.0	1 1 5	— 9.8	— 77.4
2 3 0	+ 48.9	0.0	1 5 1	+ 6.2	+ 9.8
3 2 0	+ 76.4	0.0	1 5 1	+ 6.2	— 9.8
			1 1 5	+ 21.7	+ 85.8
! 3 1 2	— 84.5	+ 53.5	1 1 5	+ 21.7	— 85.8
! 3 1 2	— 84.5	— 53.5	1 5 1	+ 26.3	+ 10.4
3 1 2	— 44.9	+ 35.5	1 5 1	+ 26.3	— 10.4
3 1 2	— 44.9	— 35.5			
3 2 1	— 33.6	+ 15.2	5 1 3	— 77.3	+ 45.8
3 2 1	— 33.6	— 15.2	5 1 3	— 77.3	— 45.8
2 1 3	— 29.7	+ 56.4	! 3 1 5	— 53.5	+ 84.5
2 1 3	— 29.7	— 56.4	! 3 1 5	— 53.5	— 84.5
2 3 1	— 13.1	+ 13.9	5 1 3	— 52.4	+ 35.5
2 3 1	— 13.1	— 13.9	5 1 3	— 52.4	— 35.5
1 2 3	— 5.3	+ 50.4	5 3 1	— 36.7	+ 9.7
1 2 3	— 5.3	— 50.4	5 3 1	— 36.7	— 9.7
1 3 2	0.0	+ 29.0	3 1 5	— 32.4	+ 64.0
1 3 2	0.0	— 29.0	3 1 5	— 32.4	— 64.0
1 2 3	+ 29.7	+ 56.4	3 5 1	— 10.9	+ 8.6
1 2 3	+ 29.7	— 56.4	3 5 1	— 10.9	— 8.6
1 3 2	+ 30.3	+ 31.9	1 3 5	0.0	+ 55.1
1 3 2	+ 30.3	— 31.9	1 3 5	0.0	— 55.1
2 3 1	+ 47.8	+ 16.8	1 5 3	+ 5.8	+ 27.3
2 3 1	+ 47.8	— 16.8	1 5 3	+ 5.8	— 27.3
2 1 3	+ 54.6	+ 73.9	1 3 5	+ 22.5	+ 59.2
2 1 3	+ 54.6	— 73.9	1 3 5	+ 22.5	— 59.2
3 2 1	+ 74.2	+ 21.3	1 5 3	+ 24.5	+ 29.0

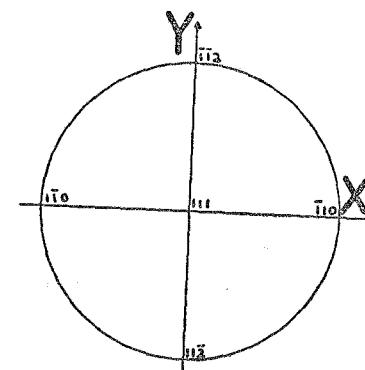
$(h k l)$	x	y	$(h k l)$	x	y
1 5 3	+ 24.5	— 29.0	7 1 1	— 61.4	+ 9.7
3 5 1	+ 45.6	+ 10.3	7 1 1	— 61.4	— 9.7
3 5 1	+ 45.6	— 10.3	1 1 7	— 7.5	+ 83.3
! 3 1 5	+ 53.5	+ 84.5	1 1 7	— 7.5	— 83.3
! 3 1 5	+ 53.5	— 84.5	1 7 1	+ 9.0	+ 7.1
5 3 1	+ 79.3	+ 13.9	1 7 1	+ 9.0	— 7.1
5 3 1	+ 79.3	— 13.9	1 1 7	+ 16.3	+ 90.0
5 3 3	— 34.5	+ 27.3	1 1 7	+ 16.3	— 90.0
5 3 3	— 34.5	— 27.3	1 7 1	+ 23.5	+ 7.4
3 3 5	— 18.3	+ 48.3	1 7 1	+ 23.5	— 7.4
3 3 5	— 18.3	— 48.3	5 1 5	— 65.1	+ 64.3
3 5 3	— 10.3	+ 24.5	5 1 5	— 65.1	— 64.3
3 5 3	— 10.3	— 24.5	5 1 5	— 45.8	+ 51.7
3 5 3	+ 42.8	+ 29.0	5 1 5	— 45.8	— 51.7
3 3 5	+ 44.9	+ 59.1	5 5 1	— 23.5	+ 7.4
3 3 5	+ 44.9	— 59.1	1 5 5	+ 5.2	+ 41.0
5 3 3	+ 72.8	+ 38.4	1 5 5	+ 5.2	— 41.0
5 3 3	+ 72.8	— 38.4	1 5 5	+ 21.9	+ 43.2
5 5 1	+ 61.4	+ 9.7	5 5 1	+ 61.4	— 9.7
5 5 1	+ 61.4	— 9.7			

[1 1 1].

$$x = \frac{50(k-h)\sqrt{6}}{\sqrt{3} \sum h^2 + h + k + l} mm$$

$$y = \frac{50(2l-h-k)\sqrt{2}}{\sqrt{3} \sum h^2 + h + k + l} mm$$

! means that the pole with this set of indices lies on the reference circle.



$(h k l)$	x	y	$(h k l)$	x	y
0 0 1	0.0	+ 51.8	! 0 1 1	— 50.0	+ 86.6
0 1 0	+ 44.8	— 25.9	! 0 1 1	+ 50.0	— 86.6
1 0 0	— 44.8	— 25.9	! 1 0 1	— 50.0	+ 86.6
1 1 0	0.0	— 31.8	! 1 1 0	+ 100.0	0.0
0 1 1	+ 27.5	+ 15.9	! 1 1 0	— 100.0	0.0
1 0 1	— 27.5	+ 15.9	1 1 1	0.0	0.0
1 0 1	+ 50.0	+ 86.6	1 1 1	0.0	— 70.7

$(h k l)$	x	y	$(h k l)$	x	y
1 1 1	+	61.2	+	35.4	
1 1 1	-	61.2	+	35.4	0 3 1
			3 0 1	-	38.8
			0 3 1	+	49.1
0 1 2	+	17.8	+	30.9	3 0 1
1 0 2	-	17.8	+	30.9	1 3 0
1 2 0	+	17.8	-	30.9	3 1 0
2 1 0	-	17.8	-	30.9	1 1 3
1 0 2	+	25.1	+	72.6	0.0
0 1 2	-	25.1	+	72.6	1 1 3
0 2 1	+	35.6	0.0		1 3 1
2 0 1	-	35.6	0.0		3 1 1
0 2 1	+	50.3	-	58.0	1 1 3
2 0 1	-	50.3	-	58.0	1 1 3
1 2 0	+	75.4	-	14.5	1 3 1
2 1 0	-	75.4	-	14.5	3 1 1
1 1 2	0.0	+	17.2		1 3 1
1 1 2	0.0	+	100.0		3 1 1
1 1 2	0.0	-	100.0		3 1 1
1 2 1	+	14.9	-	8.6	2 3 0
2 1 1	-	14.9	-	8.6	3 2 0
1 2 1	+	19.6	-	56.6	0 2 3
2 1 1	-	19.6	-	56.6	2 0 3
1 1 2	+	39.2	+	45.3	0 3 2
1 1 2	-	39.2	+	45.3	3 0 2
1 2 1	+	58.9	+	11.3	2 0 3
2 1 1	-	58.9	+	11.3	0 2 3
1 2 1	+	86.6	+	50.0	0 3 2
1 2 1	-	86.6	+	50.0	3 0 2
1 2 1	+	86.6	-	50.0	2 3 0
1 2 1	-	86.6	-	50.0	3 2 0
2 2 1	0.0	-	13.9		1 2 3
2 2 1	0.0	-	51.8		2 1 3
1 2 2	+	12.0	+	6.9	2 3 1
2 1 2	-	12.0	+	6.9	3 2 1
1 2 2	+	19.8	-	79.9	2 3 1
2 1 2	-	19.8	-	79.9	3 2 1
1 2 2	+	44.8	+	25.9	1 2 1 3
2 1 2	-	44.8	+	25.9	1 1 2 3
2 1 2	+	59.3	+	57.1	1 1 2 3
1 2 2	-	59.3	+	57.1	1 2 1 3
2 2 1	+	79.1	+	22.8	1 3 2
2 2 1	-	79.1	+	22.8	3 1 2
0 1 3	+	12.9	+	37.3	1 3 2
1 0 3	-	12.9	+	37.3	3 1 2
1 0 3	+	16.4	+	66.2	1 2 3
0 1 3	-	16.4	+	66.2	2 1 3
1 3 0	+	25.8	-	29.8	2 1 3
3 1 0	-	25.8	-	29.8	1 2 3

$(h k l)$	x	y	$(h k l)$	x	y
1 3 2	+	46.7	+	13.5	3 1 5
3 1 2	-	46.7	+	13.5	1 3 5
2 3 1	+	72.2	+	8.3	1 5 3
3 2 1	-	72.2	+	8.3	5 1 3
1 3 1 2	+	75.6	+	65.5	1 5 3
1 1 3 2	-	75.6	+	65.5	5 1 3
1 1 3 2	+	75.6	-	65.5	1 5 3
1 3 1 2	-	75.6	-	65.5	5 1 3
1 3 2 1	+	94.5	+	32.7	3 5 1
1 2 3 1	-	94.5	+	32.7	5 3 1
1 2 3 1	+	94.5	-	32.7	3 5 1
1 3 2 1	-	94.5	-	32.7	5 3 1
3 3 1		0.0	-	19.4	3 3 5
3 3 1		0.0	-	45.1	3 3 5
1 3 3	+	16.8	+	9.7	3 5 3
3 1 3	-	16.8	+	9.7	5 3 3
1 3 3	+	28.7	-	82.7	3 5 3
3 1 3	-	28.7	-	82.7	5 3 3
1 3 3	+	39.0	+	22.5	3 3 5
3 1 3	-	39.0	+	22.5	3 3 5
3 1 3	+	57.3	+	66.2	3 5 3
1 3 3	-	57.3	+	66.2	5 3 3
3 3 1	+	85.9	+	16.5	5 3 3
3 3 1	-	85.9	+	16.5	3 5 3
1 1 5		0.0	+	35.4	1 1 7
1 1 5		0.0	+	70.7	1 1 7
1 1 5	+	17.5	+	50.5	1 1 7
1 1 5	-	17.5	+	50.5	1 1 7
1 5 1	+	30.6	-	17.7	1 7 1
5 1 1	-	30.6	-	17.7	7 1 1
1 5 1	+	35.0	-	40.4	1 7 1
5 1 1	-	35.0	-	40.4	7 1 1
1 5 1	+	52.5	-	10.1	1 7 1
5 1 1	-	52.5	-	10.1	7 1 1
1 5 1	+	61.2	-	35.4	1 7 1
5 1 1	-	61.2	-	35.4	7 1 1
1 3 5	+	12.7	+	22.0	5 5 1
3 1 5	-	12.7	+	22.0	5 5 1
3 5 1	+	12.7	-	22.0	1 5 5
5 3 1	-	12.7	-	22.0	5 1 5
3 5 1	+	14.2	-	41.0	1 5 5
5 3 1	-	14.2	-	41.0	5 1 5
3 1 5	+	21.8	+	88.0	1 5 5
1 3 5	-	21.8	+	88.0	5 1 5
1 5 3	+	25.5	0.0		5 1 5
5 1 3	-	25.5	0.0		1 5 5
1 3 5	+	28.4	+	32.8	5 5 1
3 1 5	-	28.4	+	32.8	5 5 1