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1 # This file was automatically generated by ViPERLEED.
2 #
3 # Max. LEED Energy: 700.0 eV
4 # Bulk lattice: Hexagonal (p6m); a = 3.3540 AA; alpha = 120.00 deg
5 #     Basis: a = [3.3540 0.0000]; b = [-1.6770 2.9046]
6 # Surface lattice: Hexagonal (p3); a = 12.0930 AA; alpha = 120.00 deg
7 #
8 # Exporting beams from 2 domain(s) out of 2 symmetry-equivalent ones
9 # Domain 1 - Basis: a = [11.7390 2.9046]; b = [-8.3850 8.7139]
10 #     Superlattice: [[ 4 1] [-1 3]]
11 # Domain 2 - Basis: a = [11.7390 -2.9046]; b = [-8.3850 -8.7139]
12 #     Superlattice: [[ 3 -1] [-4 -3]]
13 #
14 # * h and k are the surface Miller indices of each LEED spot; both fractional
15 #   and floating-point versions are provided.
16 # * gx and gy are the horizontal and vertical components of reciprocal lattice
17 #   vectors in AA(-1), and include a factor of 2*pi.
18 # * Beams with the same absolute value of "group" are symmetry equivalent (at
19 #   normal incidence); extinct spots have a negative "group" index.
20 # * The domains contributing to each spot are listed in "domain(s)". Domains
21 #   contributing with glide-extinct spots are reported in parentheses.
22
23 ( h | k ), h , k , gx , gy ,group, domain(s),
24 (-4/13 | 1/13), -0.30769, 0.07692, -0.57641, -0.16640, 1, 2,
25 (-4/13 | 3/13), -0.30769, 0.23077, -0.57641, 0.16640, 1, 1,
26 ( 1/13 | -4/13), 0.07692, -0.30769, 0.14410, -0.58239, 1, 1,
27 ( 1/13 | 3/13), 0.07692, 0.23077, 0.14410, 0.58239, 1, 2,
28 ( 3/13 | -4/13), 0.23077, -0.30769, 0.43231, -0.41599, 1, 2,
29 ( 3/13 | 1/13), 0.23077, 0.07692, 0.43231, 0.41599, 1, 1,
30 (-1/13 | -3/13), -0.07692, -0.23077, -0.14410, -0.58239, 2, 2,
31 (-1/13 | 4/13), -0.07692, 0.30769, -0.14410, 0.58239, 2, 1,
32 (-3/13 | -1/13), -0.23077, -0.07692, -0.43231, -0.41599, 2, 1,
33 (-3/13 | 4/13), -0.23077, 0.30769, -0.43231, 0.41599, 2, 2,
34 ( 4/13 | -1/13), 0.30769, -0.07692, 0.57641, 0.16640, 2, 2,
35 ( 4/13 | -3/13), 0.30769, -0.23077, 0.57641, -0.16640, 2, 1,
36 (-7/13 | 2/13), -0.53846, 0.15385, -1.00872, -0.24959, 3, 1,
37 (-7/13 | 5/13), -0.53846, 0.38462, -1.00872, 0.24959, 3, 2,
38 ( 2/13 | -7/13), 0.15385, -0.53846, 0.28821, -0.99838, 3, 2,
39 ( 2/13 | 5/13), 0.15385, 0.38462, 0.28821, 0.99838, 3, 1,
40 ( 5/13 | -7/13), 0.38462, -0.53846, 0.72052, -0.74878, 3, 1,
41 ( 5/13 | 2/13), 0.38462, 0.15385, 0.72052, 0.74878, 3, 2,
42 (-2/13 | -5/13), -0.15385, -0.38462, -0.28821, -0.99838, 4, 1,
43 (-2/13 | 7/13), -0.15385, 0.53846, -0.28821, 0.99838, 4, 2,
44 (-5/13 | -2/13), -0.38462, -0.15385, -0.72052, -0.74878, 4, 2,
45 (-5/13 | 7/13), -0.38462, 0.53846, -0.72052, 0.74878, 4, 1,
46 ( 7/13 | -2/13), 0.53846, -0.15385, 1.00872, 0.24959, 4, 1,
47 ( 7/13 | -5/13), 0.53846, -0.38462, 1.00872, -0.24959, 4, 2,
48 (-8/13 | 2/13), -0.61538, 0.15385, -1.15283, -0.33279, 5, 2,
49 (-8/13 | 6/13), -0.61538, 0.46154, -1.15283, 0.33279, 5, 1,
50 ( 2/13 | -8/13), 0.15385, -0.61538, 0.28821, -1.16477, 5, 1,
51 ( 2/13 | 6/13), 0.15385, 0.46154, 0.28821, 1.16477, 5, 2,
52 ( 6/13 | -8/13), 0.46154, -0.61538, 0.86462, -0.83198, 5, 2,
53 ( 6/13 | 2/13), 0.46154, 0.15385, 0.86462, 0.83198, 5, 1,
54 (-2/13 | -6/13), -0.15385, -0.46154, -0.28821, -1.16477, 6, 2,
55 (-2/13 | 8/13), -0.15385, 0.61538, -0.28821, 1.16477, 6, 1,
56 (-6/13 | -2/13), -0.46154, -0.15385, -0.86462, -0.83198, 6, 1,
57 (-6/13 | 8/13), -0.46154, 0.61538, -0.86462, 0.83198, 6, 2,
58 ( 8/13 | -2/13), 0.61538, -0.15385, 1.15283, 0.33279, 6, 2,
59 ( 8/13 | -6/13), 0.61538, -0.46154, 1.15283, -0.33279, 6, 1,
60 (-11/13 | 5/13), -0.84615, 0.38462, -1.58513, -0.08320, 7, 1,
61 (-11/13 | 6/13), -0.84615, 0.46154, -1.58513, 0.08320, 7, 2,
62 ( 5/13 | -11/13), 0.38462, -0.84615, 0.72052, -1.41437, 7, 2,
63 ( 5/13 | 6/13), 0.38462, 0.46154, 0.72052, 1.41437, 7, 1,
64 ( 6/13 | -11/13), 0.46154, -0.84615, 0.86462, -1.33117, 7, 1,
65 ( 6/13 | 5/13), 0.46154, 0.38462, 0.86462, 1.33117, 7, 2,
66 (-10/13 | 1/13), -0.76923, 0.07692, -1.44103, -0.66558, 8, 1,
67 (-10/13 | 9/13), -0.76923, 0.69231, -1.44103, 0.66558, 8, 2,
68 ( 1/13 | -10/13), 0.07692, -0.76923, 0.14410, -1.58076, 8, 2,
69 ( 1/13 | 9/13), 0.07692, 0.69231, 0.14410, 1.58076, 8, 1,
70 ( 9/13 | -10/13), 0.69231, -0.76923, 1.29693, -0.91518, 8, 1,
71 ( 9/13 | 1/13), 0.69231, 0.07692, 1.29693, 0.91518, 8, 2,
72 (-5/13 | -6/13), -0.38462, -0.46154, -0.72052, -1.41437, 9, 1,
73 (-5/13 | 11/13), -0.38462, 0.84615, -0.72052, 1.41437, 9, 2,

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74	(-6/13	-5/13)	-0.46154	-0.38462	-0.86462	-1.33117	9	2
75	(-6/13	11/13)	-0.46154	0.84615	-0.86462	1.33117	9	1
76	(11/13	-5/13)	0.84615	-0.38462	1.58513	0.08320	9	1
77	(11/13	-6/13)	0.84615	-0.46154	1.58513	-0.08320	9	2
78	(-1/13	-9/13)	-0.07692	-0.69231	-0.14410	-1.58076	10	1
79	(-1/13	10/13)	-0.07692	0.76923	-0.14410	1.58076	10	2
80	(-9/13	-1/13)	-0.69231	-0.07692	-1.29693	-0.91518	10	2
81	(-9/13	10/13)	-0.69231	0.76923	-1.29693	0.91518	10	1
82	(10/13	-1/13)	0.76923	-0.07692	1.44103	0.66558	10	1
83	(10/13	-9/13)	0.76923	-0.69231	1.44103	-0.66558	10	2
84	(-3/13	-9/13)	-0.23077	-0.69231	-0.43231	-1.74716	11	2
85	(-3/13	12/13)	-0.23077	0.92308	-0.43231	1.74716	11	1
86	(-9/13	-3/13)	-0.69231	-0.23077	-1.29693	-1.24797	11	1
87	(-9/13	12/13)	-0.69231	0.92308	-1.29693	1.24797	11	2
88	(12/13	-3/13)	0.92308	-0.23077	1.72924	0.49919	11	2
89	(12/13	-9/13)	0.92308	-0.69231	1.72924	-0.49919	11	1
90	(-12/13	3/13)	-0.92308	0.23077	-1.72924	-0.49919	12	2
91	(-12/13	9/13)	-0.92308	0.69231	-1.72924	0.49919	12	1
92	(3/13	-12/13)	0.23077	-0.92308	0.43231	-1.74716	12	1
93	(3/13	9/13)	0.23077	0.69231	0.43231	1.74716	12	2
94	(9/13	-12/13)	0.69231	-0.92308	1.29693	-1.24797	12	2
95	(9/13	3/13)	0.69231	0.23077	1.29693	1.24797	12	1
96	(-14/13	10/13)	-1.07692	0.76923	-2.01744	0.49919	13	2
97	(-14/13	4/13)	-1.07692	0.30769	-2.01744	-0.49919	13	1
98	(10/13	-14/13)	0.76923	-1.07692	1.44103	-1.49756	13	1
99	(10/13	4/13)	0.76923	0.30769	1.44103	1.49756	13	2
100	(4/13	-14/13)	0.30769	-1.07692	0.57641	-1.99675	13	2
101	(4/13	10/13)	0.30769	0.76923	0.57641	1.99675	13	1
102	(-10/13	-4/13)	-0.76923	-0.30769	-1.44103	-1.49756	14	2
103	(-10/13	14/13)	-0.76923	1.07692	-1.44103	1.49756	14	1
104	(-4/13	-10/13)	-0.30769	-0.76923	-0.57641	-1.99675	14	1
105	(-4/13	14/13)	-0.30769	1.07692	-0.57641	1.99675	14	2
106	(14/13	-10/13)	1.07692	-0.76923	2.01744	-0.49919	14	2
107	(14/13	-4/13)	1.07692	-0.30769	2.01744	0.49919	14	1
108	(-15/13	7/13)	-1.15385	0.53846	-2.16155	-0.08320	15	2
109	(-15/13	8/13)	-1.15385	0.61538	-2.16155	0.08320	15	1
110	(7/13	-15/13)	0.53846	-1.15385	1.00872	-1.91355	15	1
111	(7/13	8/13)	0.53846	0.61538	1.00872	1.91355	15	2
112	(8/13	-15/13)	0.61538	-1.15385	1.15283	-1.83036	15	2
113	(8/13	7/13)	0.61538	0.53846	1.15283	1.83036	15	1
114	(-1	0)	-1.00000	0.00000	-1.87334	-1.08157	16	1+2
115	(-1	1)	-1.00000	1.00000	-1.87334	1.08157	16	1+2
116	(0	-1)	0.00000	-1.00000	0.00000	-2.16315	16	1+2
117	(0	1)	0.00000	1.00000	-0.00000	2.16315	16	1+2
118	(1	-1)	1.00000	-1.00000	1.87334	-1.08157	16	1+2
119	(1	0)	1.00000	0.00000	1.87334	1.08157	16	1+2
120	(-7/13	-8/13)	-0.53846	-0.61538	-1.00872	-1.91355	17	2
121	(-7/13	15/13)	-0.53846	1.15385	-1.00872	1.91355	17	1
122	(-8/13	-7/13)	-0.61538	-0.53846	-1.15283	-1.83036	17	1
123	(-8/13	15/13)	-0.61538	1.15385	-1.15283	1.83036	17	2
124	(15/13	-7/13)	1.15385	-0.53846	2.16155	0.08320	17	2
125	(15/13	-8/13)	1.15385	-0.61538	2.16155	-0.08320	17	1
126	(-16/13	12/13)	-1.23077	0.92308	-2.30565	0.66558	18	1
127	(-16/13	4/13)	-1.23077	0.30769	-2.30565	-0.66558	18	2
128	(12/13	-16/13)	0.92308	-1.23077	1.72924	-1.66396	18	2
129	(12/13	4/13)	0.92308	0.30769	1.72924	1.66396	18	1
130	(4/13	-16/13)	0.30769	-1.23077	0.57641	-2.32954	18	1
131	(4/13	12/13)	0.30769	0.92308	0.57641	2.32954	18	2
132	(-12/13	-4/13)	-0.92308	-0.30769	-1.72924	-1.66396	19	1
133	(-12/13	16/13)	-0.92308	1.23077	-1.72924	1.66396	19	2
134	(-4/13	-12/13)	-0.30769	-0.92308	-0.57641	-2.32954	19	2
135	(-4/13	16/13)	-0.30769	1.23077	-0.57641	2.32954	19	1
136	(16/13	-12/13)	1.23077	-0.92308	2.30565	-0.66558	19	1
137	(16/13	-4/13)	1.23077	-0.30769	2.30565	0.66558	19	2
138	(-18/13	11/13)	-1.38462	0.84615	-2.59386	0.33279	20	2
139	(-18/13	7/13)	-1.38462	0.53846	-2.59386	-0.33279	20	1
140	(11/13	-18/13)	0.84615	-1.38462	1.58513	-2.07995	20	1
141	(11/13	7/13)	0.84615	0.53846	1.58513	2.07995	20	2
142	(7/13	-18/13)	0.53846	-1.38462	1.00872	-2.41274	20	2
143	(7/13	11/13)	0.53846	0.84615	1.00872	2.41274	20	1
144	(-17/13	14/13)	-1.30769	1.07692	-2.44975	0.91518	21	2
145	(-17/13	3/13)	-1.30769	0.23077	-2.44975	-0.91518	21	1
146	(14/13	-17/13)	1.07692	-1.30769	2.01744	-1.66396	21	1