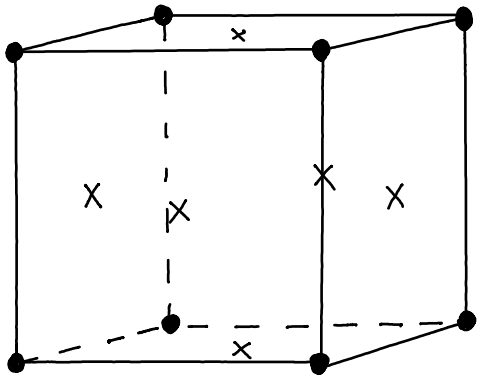
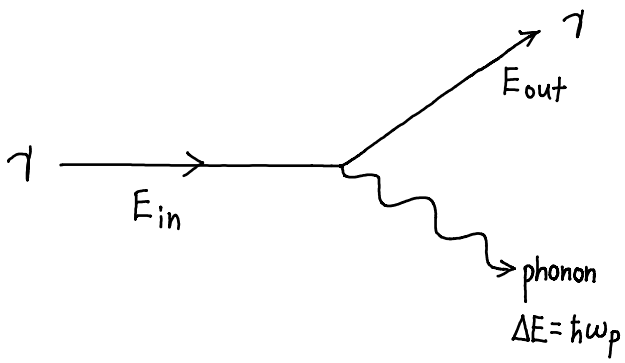
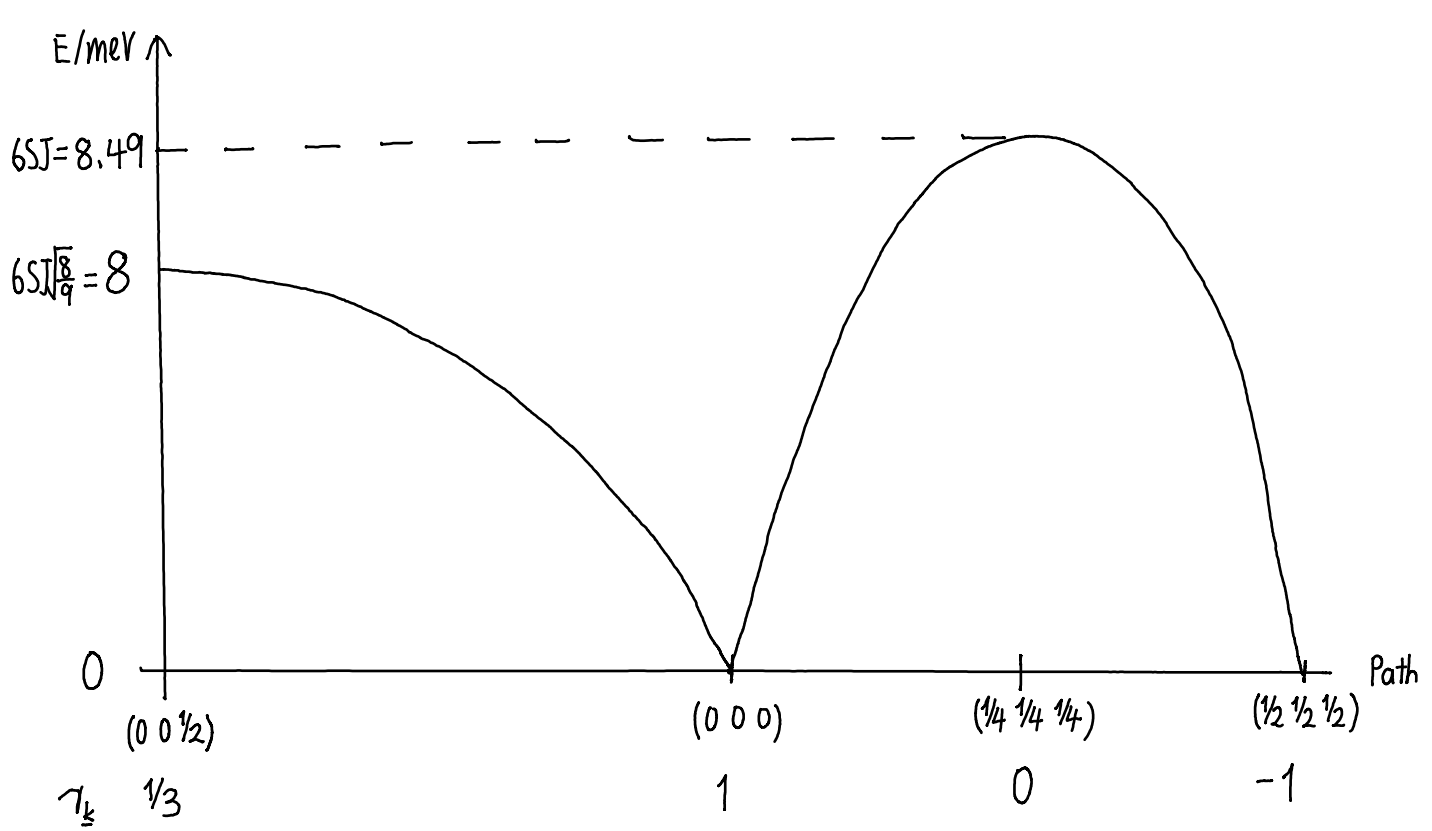
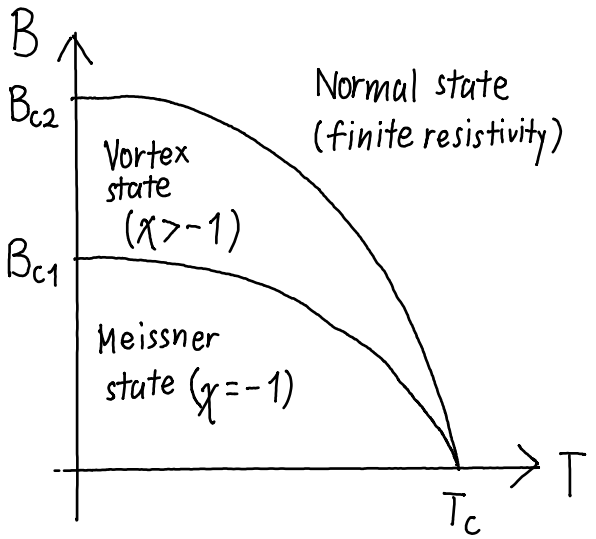


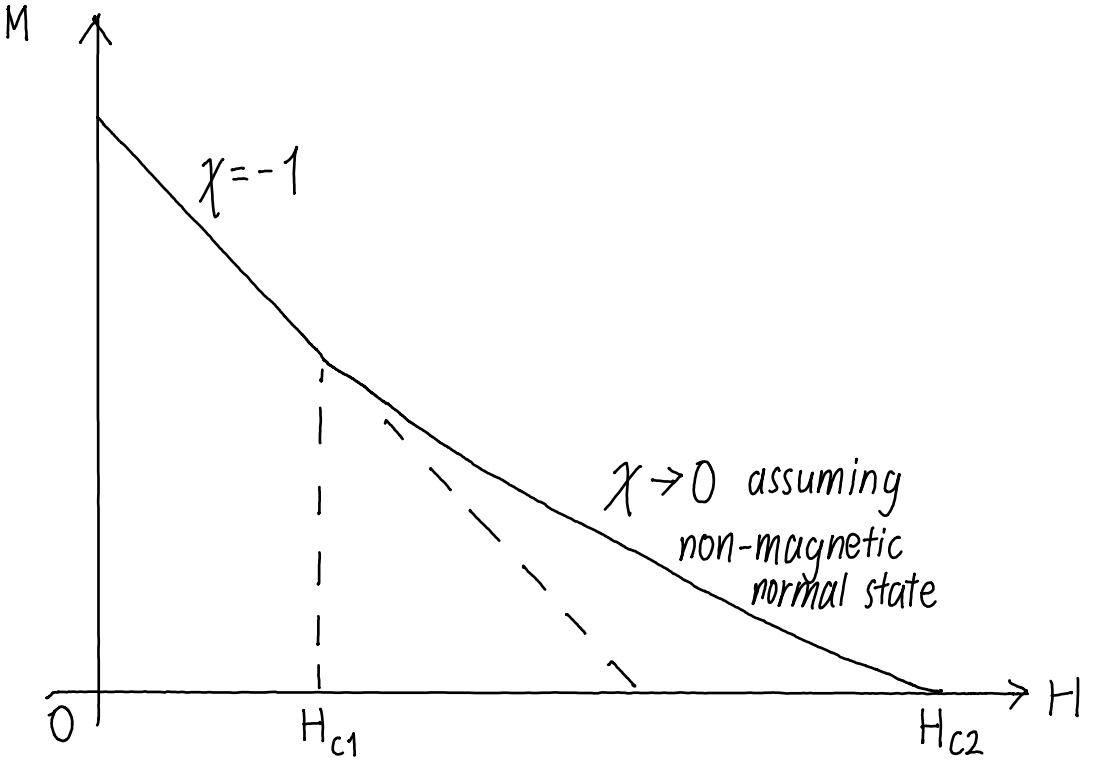
- 1/8 of atom in lattice
- × 1/2 of atom in lattice

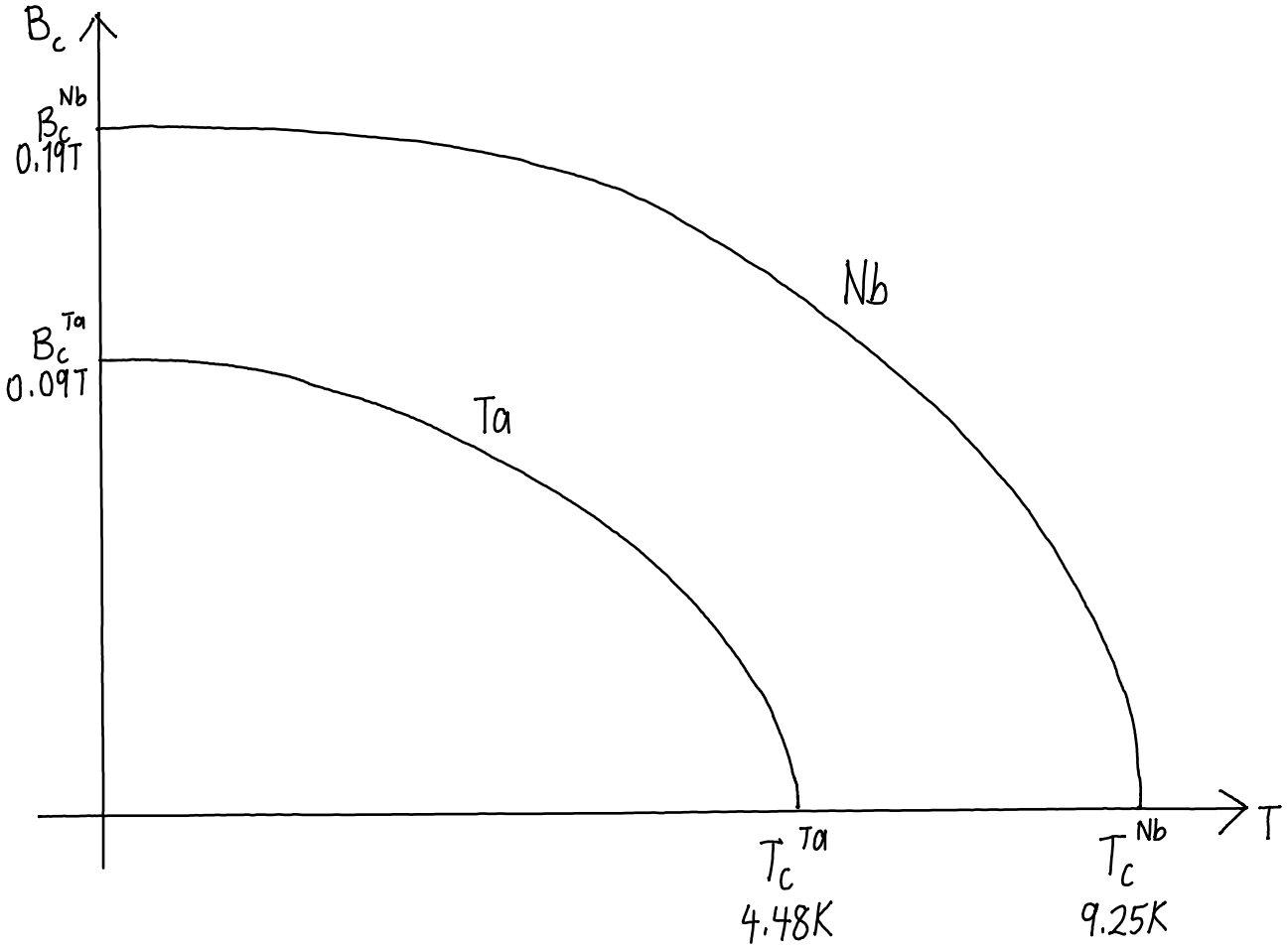
Total # of atoms: $8(1/8) + 6(1/2) = 4$

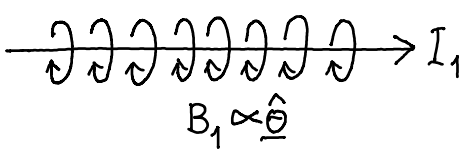

γ
E_{out}
γ
E_{in}
phonon
$\Delta E = \hbar\omega_p$

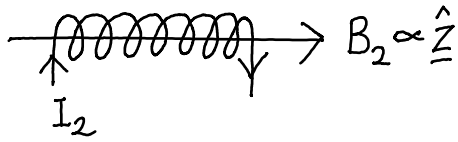

E/meV
6SJ=8.49
6SJ√8/9=8
0
Path
(0 0 1/2)
(0 0 0)
(1/4 1/4 1/4)
(1/2 1/2 1/2)
γ_k
1/3
1
0
-1

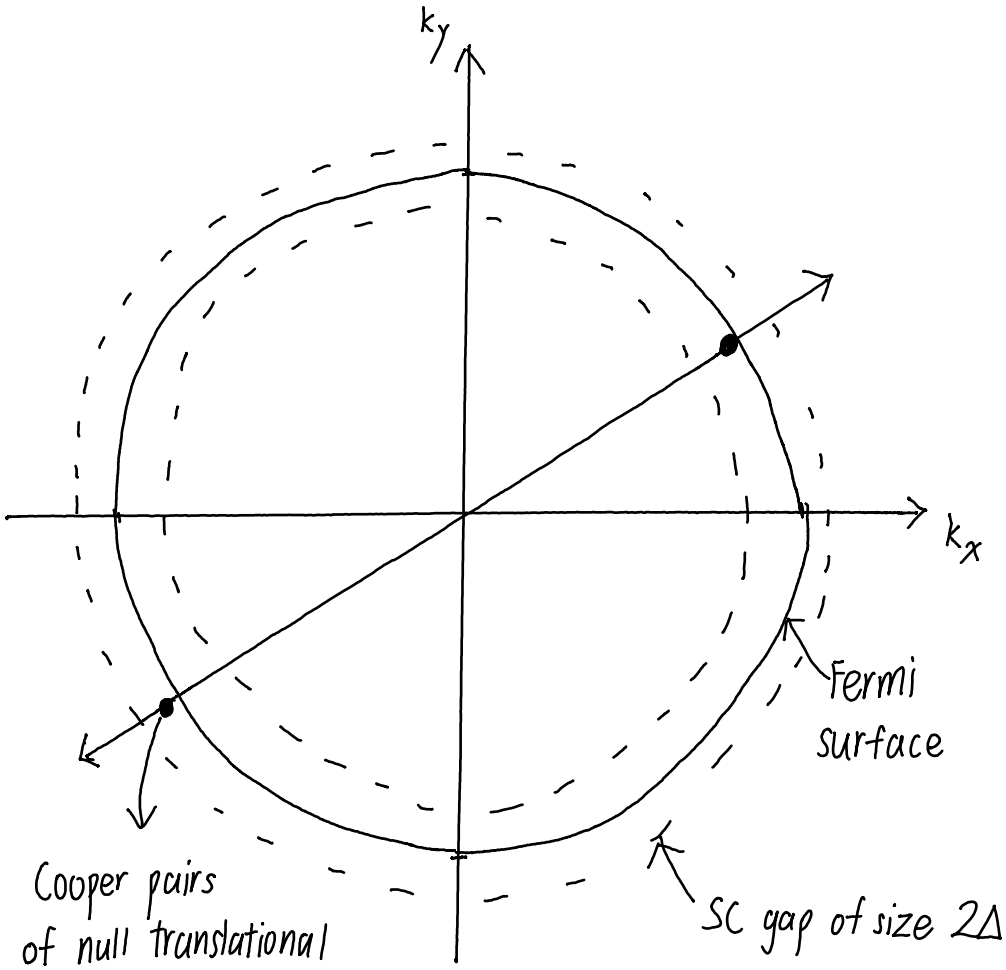

B
B_{c2}
Normal state
(finite resistivity)
Vortex
state
($\chi > -1$)
B_{c1}
Meissner
state ($\chi = -1$)
T
T_c


M
χ=-1
χ→0 assuming
non-magnetic
normal state
H
0
Hc1
Hc2

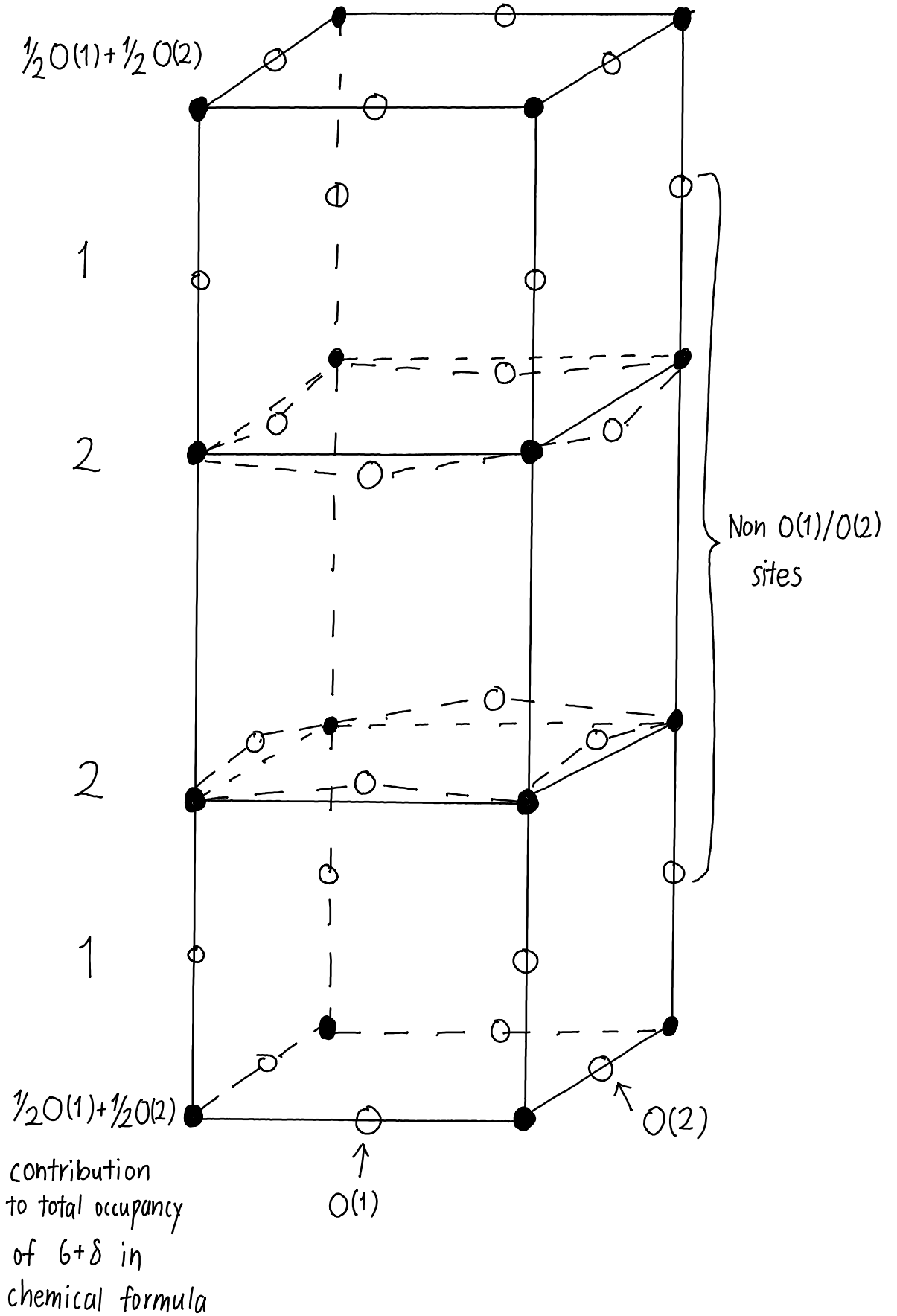

B_c
B_c^{Nb}
0.19T
B_c^{Ta}
0.09T
Nb
Ta
T
T_c^{Ta}
4.48K
T_c^{Nb}
9.25K

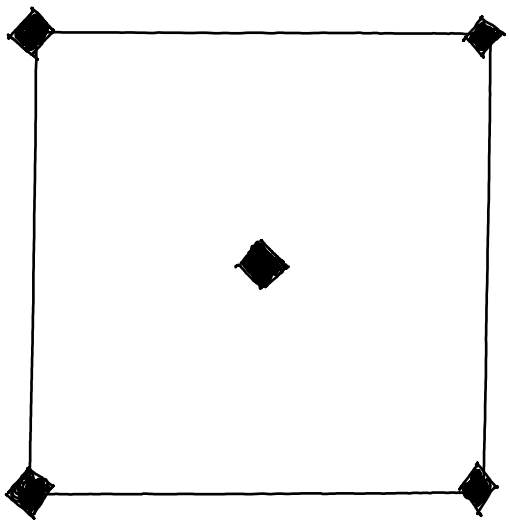

I_1
$B_1 \propto \hat{\theta}$

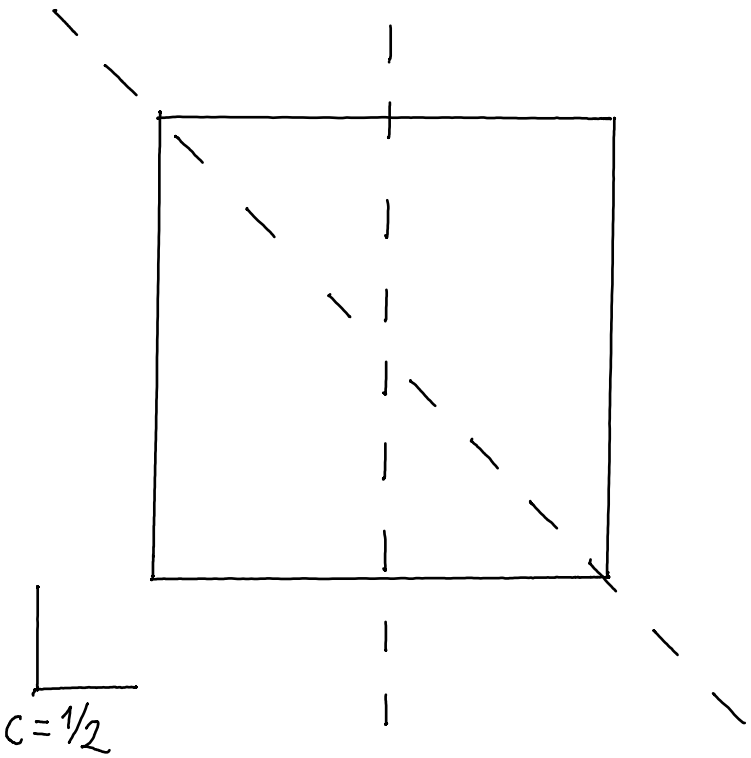

$B_2 \propto \hat{z}$
I_2

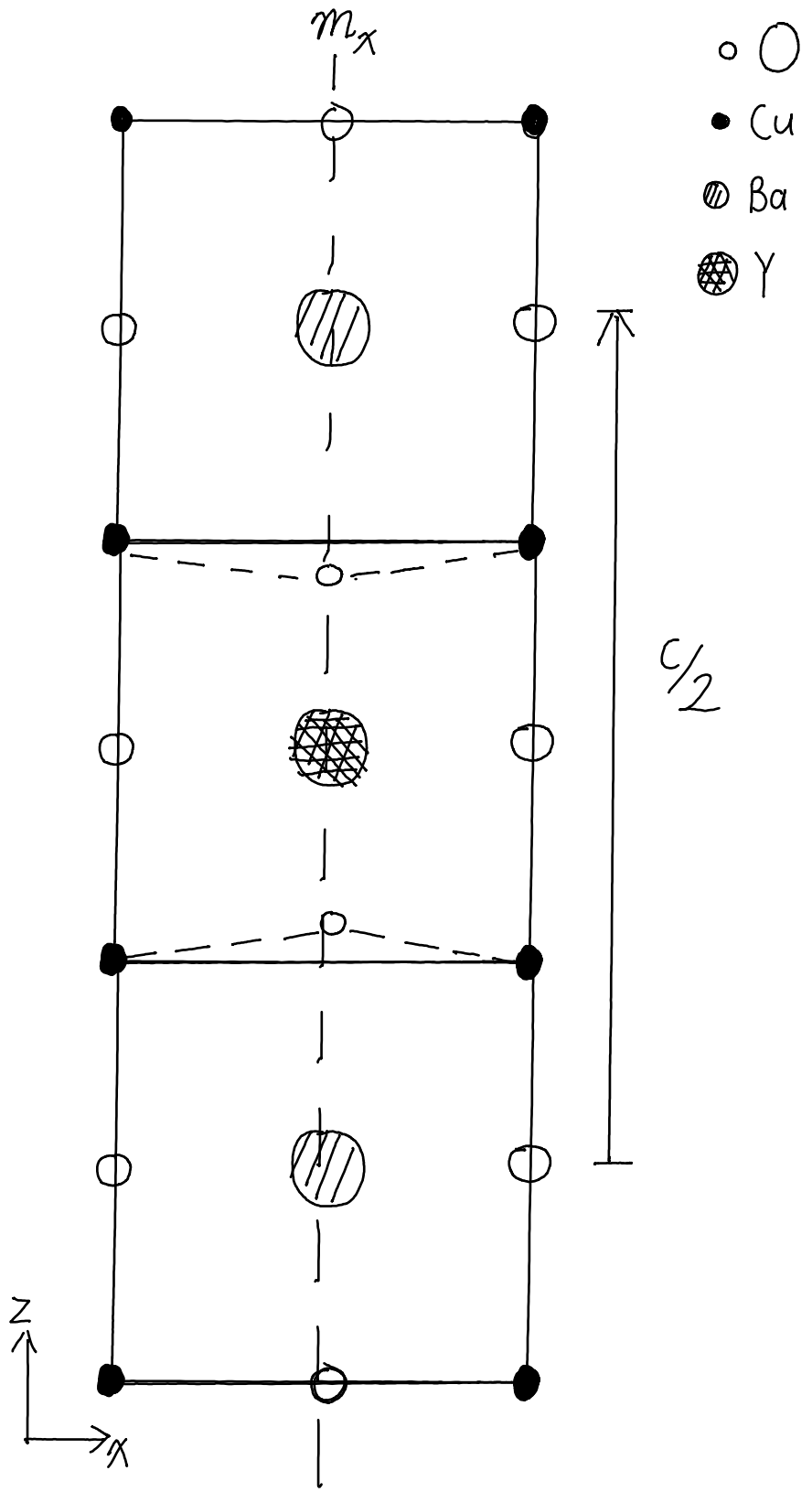


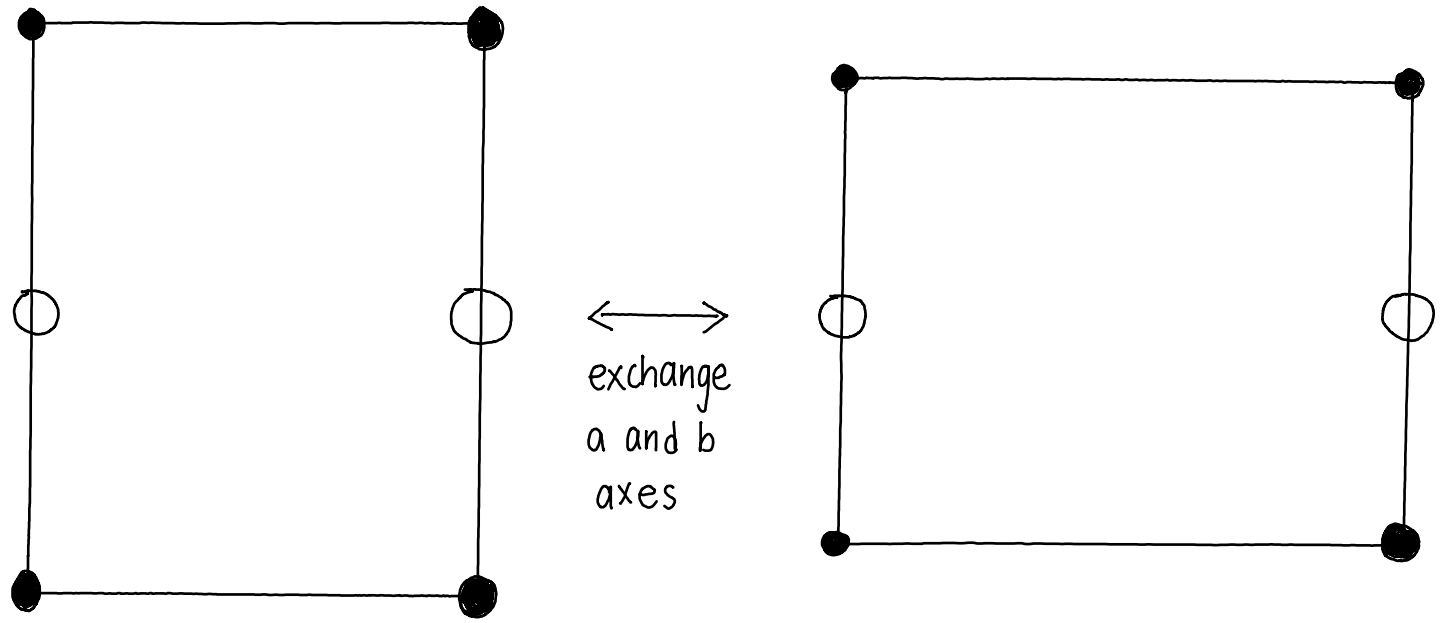
$\frac{1}{\sqrt{2}}[|\uparrow\downarrow\rangle - |\downarrow\uparrow\rangle]$ as spin wavefunction due to Pauli exclusion

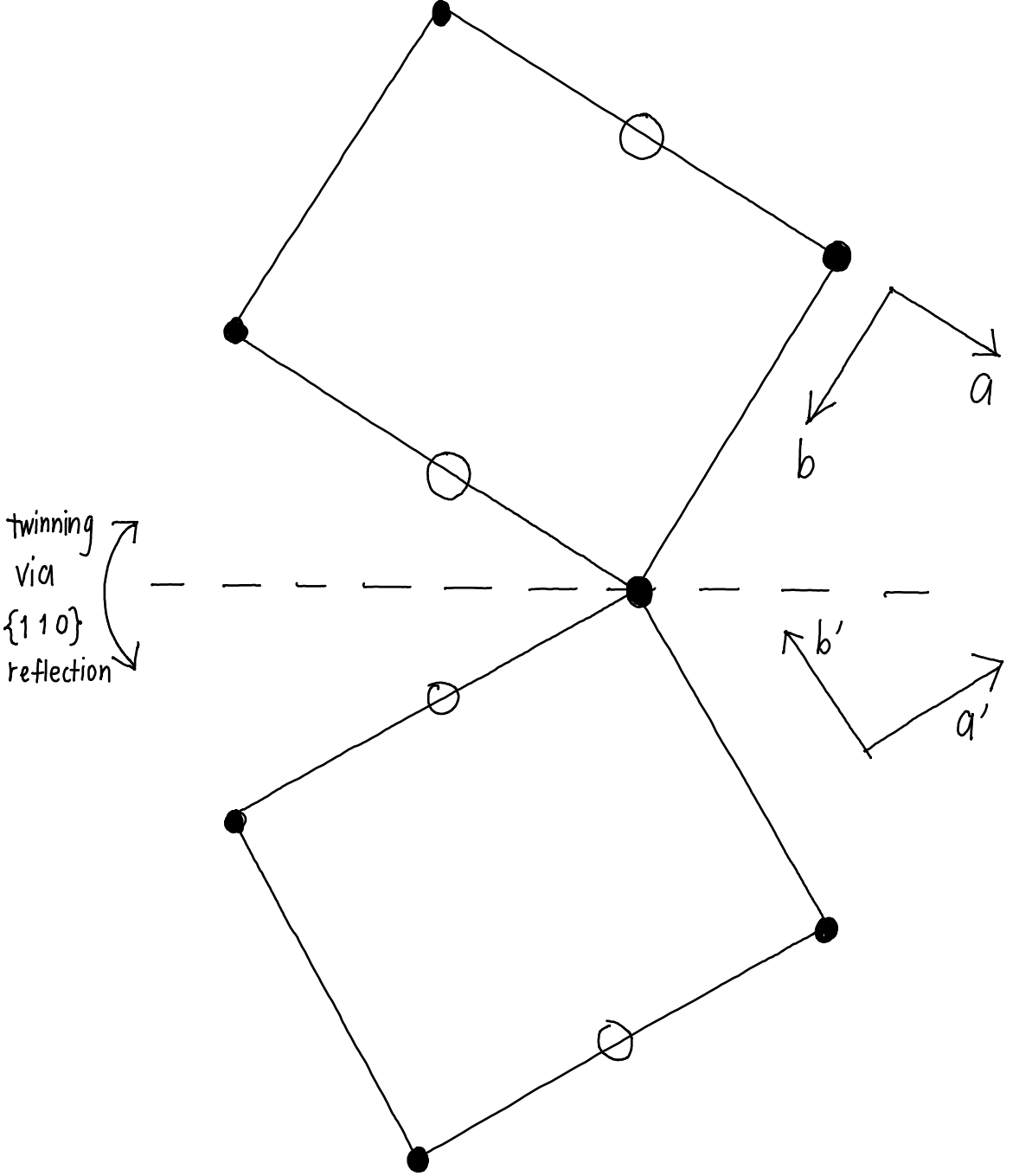

½ O(1) + ½ O(2)
1
2
2
1
Non O(1)/O(2) sites
½ O(1) + ½ O(2)
O(2)
O(1)
contribution to total occupancy of 6+δ in chemical formula

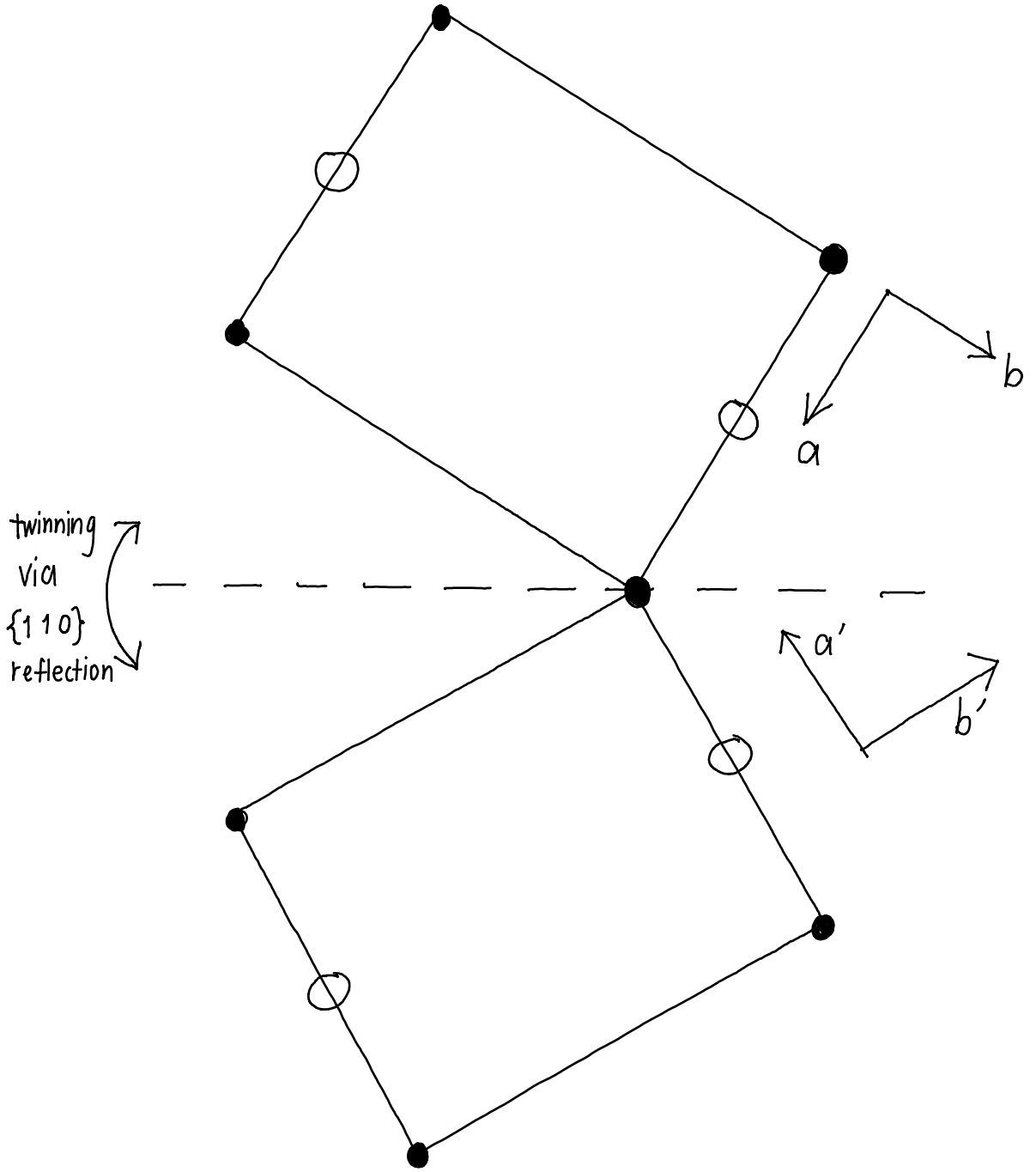


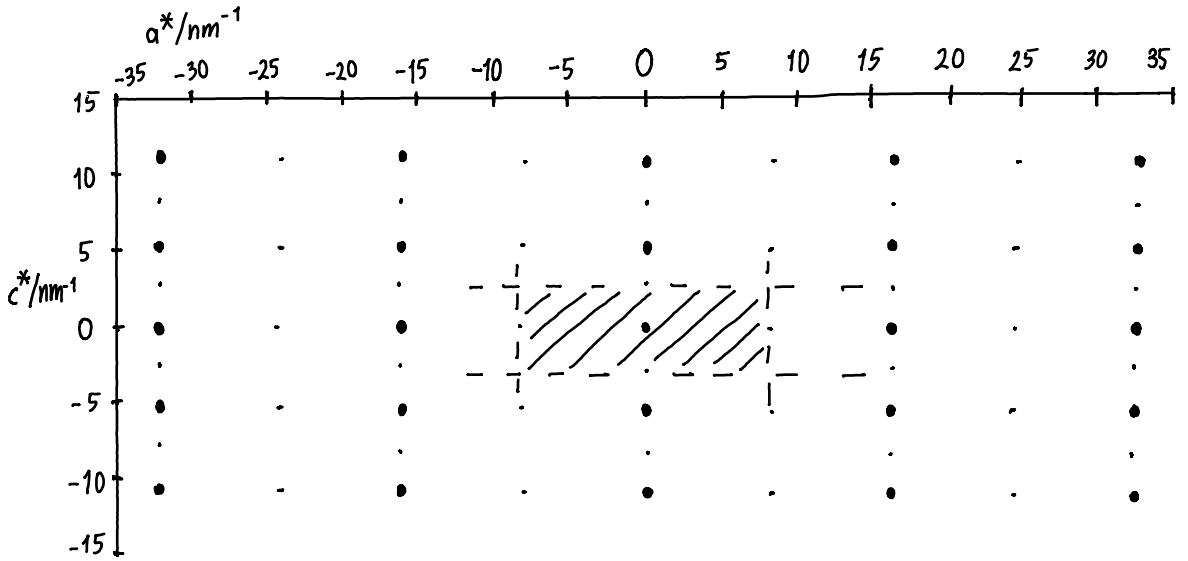

c = 1/2

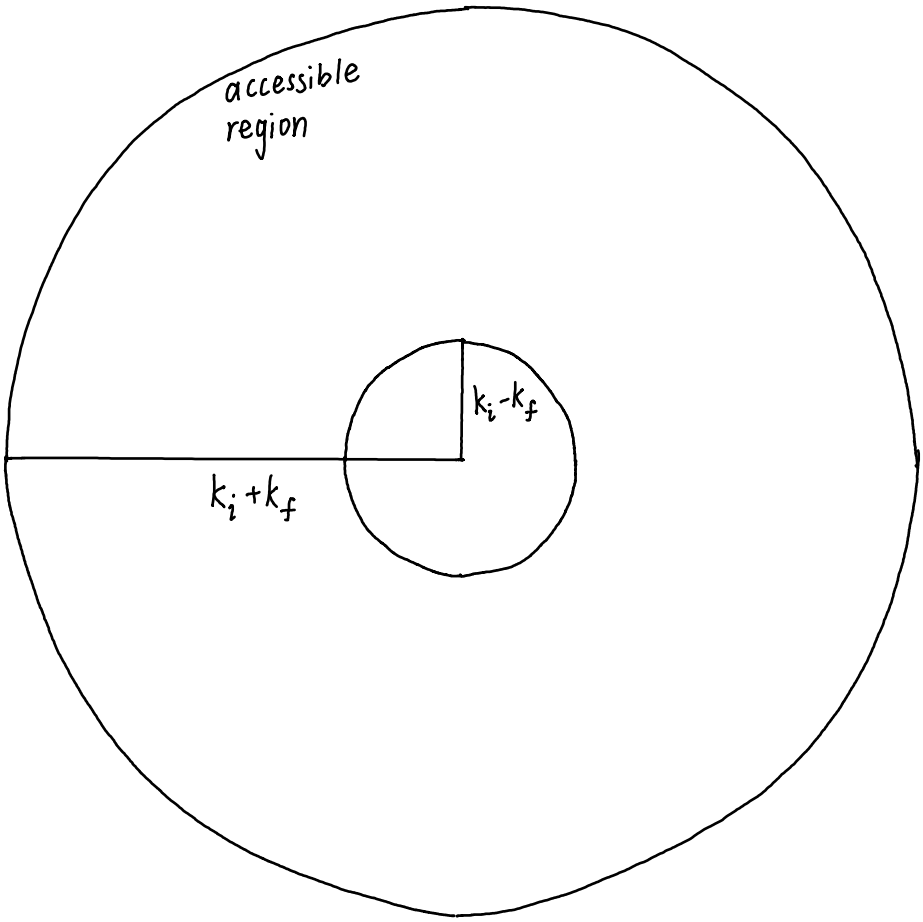

m_x
O
Cu
Ba
Y
c/2
z
x

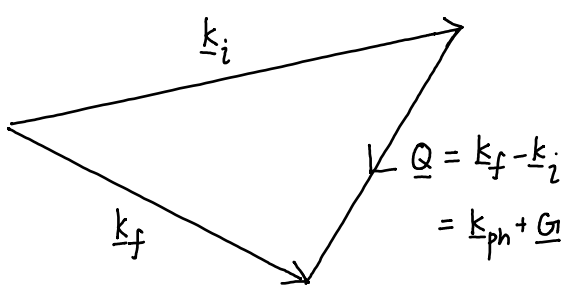

exchange
a and b
axes


a
b
twinning
via
{1 1 0}
reflection
b'
a'


b
a
twinning
via
{1 1 0}
reflection
a'
b'


a*/nm⁻¹
-35
-30
-25
-20
-15
-10
-5
0
5
10
15
20
25
30
35
15
10
5
c*/nm⁻¹
0
-5
-10
-15


accessible
region
$k_i - k_f$
$k_i + k_f$


$\underline{k}_i$
$\underline{Q} = \underline{k}_f - \underline{k}_i$
$= \underline{k}_{ph} + \underline{G}$
$\underline{k}_f$