Front inside cover:
$e^2/4\pi\epsilon_0$ should be 1.44×10^{-7} eV-cm.
h/e^2 should be 25800 Ω.

p. 5
The third line from the end should read "one of the four rows..." not "one of the three rows."

p. 8
The eigenstate solution in Exercise #1.2 is correct for V_{12} real; more generally the eigenstate is a superposition of the two states with equal weight $1/\sqrt{2}$ and a phase factor $e^{i\phi} = \pm|V_{12}|/V_{12}$ multiplying the second term.

p. 15
The vertical axis of Figure 1.12 should be labeled $E = \hbar^2 K^2/2m$.

p. 21
last three basis vectors of cuprite stucture should be:
$\frac{a}{4}(3\hat{x} + 3\hat{y} + \hat{z})$, $\frac{a}{4}(3\hat{x} + \hat{y} + 3\hat{z})$, $\frac{a}{4}(\hat{x} + 3\hat{y} + 3\hat{z})$.

p. 27
Figure 1.18: Caption (a) should read "...showing the threefold symmetry of the [111] axis of crystalline silicon."

p. 31
On the right-hand side of the first line of the equations before (1.37), there should be a left-hand bracket, i.e., $\langle\psi_{n,\vec{Q}/2-d\vec{k}-\vec{Q}}|$

p. 33
Equation (1.39) should read

$$\vec{k} = \frac{\nu_1}{N_1}\vec{b}_1 + \frac{\nu_2}{N_2}\vec{b}_2 + \frac{\nu_3}{N_3}\vec{b}_3.$$

p. 35
In Exercise 1.15, second paragraph, second sentence, should read "In the above solution, there are two sets of degenerate eigenstates ..." (not three).

p. 38
All three lines in (1.48) should have the right side multiplied by dE.

p. 41
The last two lines of (1.50) should have $u_{n\vec{k}}$ divided by $\sqrt{V}$ to be consistent with the definition (1.14).

p. 45
Equation (1.55) should have $|\vec{k}-\vec{Q}|^2$, not $(\vec{k}-\vec{Q})^2$.

Equations (1.56), and (1.57) should have $|\vec{k}-\vec{Q}|^2$, not $(\vec{k}-\vec{Q})^2$.

The equation preceding Equation (1.58) should have Q_0^2 not $\vec{Q}^2$ in two places.

Equation (1.58) should read

$$E(\Delta\vec{k}) = \frac{\hbar^2|\Delta\vec{k}|^2}{2m} + \frac{\hbar^2(Q_0/2)^2}{2m} \pm \sqrt{\left(\frac{\hbar^2\vec{Q}_0\cdot\Delta\vec{k}}{2m}\right)^2 + |U_0(\vec{Q}_0)|^2}.$$

p. 52
Equation (1.68) should read

$$\frac{1}{m_{\rm eff}} = \frac{1}{m} + \frac{2}{m^2}\sum_m \frac{|p_{mn}|^2}{E_n(0)-E_m(0)}$$

i.e., $\hbar^2$ should not appear.

p. 85
In the caption of Fig. 2.9, the formula should read $\mu \approx (E_c+E_v)/2$.

p. 95
The first equation on this page should read

$$I \sim e^{-(E_g - eV_{\rm ext})/k_BT}.$$

p. 98
The last line of the last full paragraph should read, "when k_BT is much less than the gap energy."

p. 111
The last line should read, "...k_y runs from $-m\omega_cL_x/2\hbar$ to $m\omega_cL_x/2\hbar$."

p. 115
The quantum density of states factor at the bottom of the page should have a factor e^{-E/k_BT}, with no μ, consistent with Eq. (2.20), for low-density electrons.

p. 116
In the next-to-last paragraph, the Hall resistance should be $R_H = h/e^2\nu$.

p. 117
After the formula $J_x = nev_x$, the total density should be defined as $n = \nu N/A$, where ν is the number of full Landau levels. Then the following equation should read

$$E_y = \frac{J_x A}{\nu N e} B_z,$$

and $\Phi = B_z A = N\Phi_0$. Finally, Equation (2.50) should read

$$E_y = \frac{N\Phi_0}{\nu N e} J_x = \left(\frac{h}{e^2}\right) \frac{J_x}{\nu} = R_H J_x.$$

p. 119
In the 6th line of the first paragraph of Section 2.8.4, the formula should be $N/A = \nu eB/h$.

p. 131
In Equation (3.9) and (3.11), the $\sqrt{2}$ factors should all be replaced by 2. This also affects (3.12) and (3.13) below.
In Equation (3.10), the exponential terms should have the form

$$e^{i(\vec{k}\cdot\vec{R}-\omega t)}.$$

p. 132
Equation (3.12) should be

$$\frac{K}{M}\begin{pmatrix} 4\cos ka - 4 & 0 \\ 0 & 2\cos ka - 2 \end{pmatrix}\begin{pmatrix} x0 \\ y0 \end{pmatrix} = -\omega^2 \begin{pmatrix} x0 \\ y0 \end{pmatrix}$$

Equation (3.13) should be

$$\omega_L = (\omega_0 a\sqrt{2})k,$$
$$\omega_T = (\omega_0 a)k,$$

p. 135
$\vec{u}_l^0$ in (3.15) and (3.18) should be just $\vec{u}^0$, without subscript; it is the polarization vector of the wave.

p. 143
In Exercise 3.8, the equation for energy should have U/V on the left side of the equation, not just U.

p. 151
Before equation (3.47) should read, “We define the *permittivity* of the medium,”.

Before equation (3.49) should be added, “We will often refer to ϵ as the *dielectric constant* of the medium, though technically the dielectric constant is defined as the unitless ratio ϵ/ϵ_0.”

p. 152
For clarity, the leftmost term of Eq. (3.53) should read $\vec{k} \times (\vec{k} \times \vec{E})$.
The summation over i in Eq. (3.54) is optional and can be dropped.

p. 159
The vertical axis of Fig. 3.18(b) should be labeled as x_3.

p. 160
For clarity, the leftmost term of Eq. (3.71) should read $\hat{u} \times (\hat{u} \times \tilde{\eta}\hat{D})$.

p. 168
Equation (3.80) should read

$$n_1 E_0^{(i)} \cos\theta_i - n_1 E_0^{(r)} \cos\theta_r = n_2 E_0^{(t)} \cos\theta_t.$$

p. 169
Eq. (3.84) and the equation before it should be given for $\langle\vec{S}\rangle$ (the time average), not just $\vec{S}$.

p. 171
Eq. (3.88) should be given for $\langle\vec{S}\rangle$ (the time average), not just $\vec{S}$.

p. 188
The limit in the equation at the top of the page should be $a \to 0$, not $k \to 0$.

p. 196
In the next-to-last line of equation (4.59), the first term $e^{i\omega_k t}$ should be $e^{-i\omega_k t}$.

p. 198
“fig.saw” in the line after equation (4.62) should be replaced with “We can apply”.

p. 209
In the next-to-last line of the text, $|i\rangle$ should be $|\psi_i\rangle$.

p. 212
The term in parentheses should be written $(a^\dagger_{k_3} + a_{-k_3})$ to conserve momentum with the same k_3 in each term.

p. 219
In Exercise 4.18, last line should read "$\rho V = MN$, where M is the mass of an atom and N is the number of unit cells, ..."

p. 221
Equation (4.110) should have π^4, not π^2.

p. 223
In the equation after equation (4.113), both terms should be negative. (To follow the calculation more easily, not that the integral of $\partial f/\partial\varepsilon$ is equal to -1, and the integral of $\varepsilon^2\partial f/\partial\varepsilon$ is equal to $-\pi^2/3$.)

p. 227
In the equation after (4.123), the third term inside the large parentheses should have $c^2_{\vec{k}}$; i.e., it should be squared just as in the second term.

p. 239
In the second line of (5.24), $\sqrt{2}$ should be $\sqrt{3}$.

p. 243
The second line of (5.32) should have $\sqrt{2}$ in the denominator.

p. 244 The first line of (5.33) should have 2 in the denominator, not numerator, and the second line should have $\sqrt{2}$ in the denominator, not numerator.

p. 248
The right-hand side of the equation in the text following Eq. (5.47) should be multiplied by a factor of 2π.

p. 252
In first line of the last equation, the exponential factor should be $e^{i|\vec{k}_1-\vec{k}_2|r\cos\theta}$ (missing r).

p. 253
In the first line of Eq. (5.63), the factor $(1 - N_{\vec{k}'})$ should be inside the summation over $\vec{k}'$.

p. 260
The beginning of the last paragraph is better written as follows:

"From Equation (4.62) in Section 4.4, the average amplitude of the displacement is given by the average amplitude per mode times the number of modes:

$$x_0^2 = \frac{2\hbar N_k}{M\omega},$$

where we have written $\rho V = MN$, with M the mass of the unit cell and N the number of cells (which is also equal to the number of phonon modes)."

p. 262
The first full paragraph should begin, "Using the definition of the field operators (4.66)..."

p. 265
The potential energy in the equation after (5.88), and in equation (5.89), should be written as $U(r)$, not the electric potential $V(r)$.

p. 276
In Exercises 5.18 and 5.19, the formula for resistance should be $R = l/A\sigma$.

p. 278
In the line after Equation (5.116), the assumed form of the density should read $n(\vec{x}) = n_0 e^{\mu(\vec{x})/k_B T}$. (No minus sign.)

p. 282
In Exercise 5.22, the field should be given as 5 V over a distance of 1 cm, not 1 micron.

p. 286
The last line of (5.136) should read

$$= -(\vec{b} \cdot \tilde{\sigma}) \cdot (d\vec{l} \times d\vec{r}).$$

p. 300
In Exercise 6.3, the third line from the end should say, "show that $\alpha^*_{ij} = \alpha^{-1}_{ij}$ and therefore ...".

p. 309
Before the large matrix equation, the text should say that A is a 3×3 representation and B is a 2×2 representation.

p. 311
In Table 6.8, in the last column of the second row, the product of Γ_2 and Γ_8 should be Γ_8.

p. 318

In (6.16), E_{12} should have a factor $1/\sqrt{3}$, not $1/3$.

Also in (6.16), the second term in E_{22} should have $(k_x^2 + k_y^2)$.

In the subsequent equation, the right-hand side of the equation for p_{cv}^2 should have m^2 in the denominator.

In (6.17), the standard definition uses B^2 instead of just B.

In Exercise 6.10, it should be noted that the form (6.15) will give $C = 0$ (light and heavy hole splitting, but no warping). Nonzero C is obtained only when coupling to higher p-like bands is included.

p. 322

In Table 6.12, the second half of the first row ($D_0^{\pm}$) should have all characters equal to ± 1.

p. 324

In the paragraph after (6.18), it is stated that the vanishing of the x^2, y^2 and z^2 individual functions eliminates the Γ_4^+ representation for the quadrupole operator in the O_h group. Rather, this representation does not occur because of the symmetry of $xy = yx$ etc.; i.e., the basis functions $yz - zy, zx - xz$, and $xy - yx$, which transform as L_x, L_y and L_z, all vanish.

p. 326

The 3rd line from the top should read "yz and xz transform exactly as L_x and L_y.

The last sentence of the text before Exercise 6.13 should read, "…but polarization along $\theta = 90°$ will not."

p. 328

In the first sentence of the last paragraph, the words "per unit cell" should be deleted.

p. 329

Exercise 6.16 should be deleted since the proof is given in the current version of the text on page 328.

p. 335

The curve for the imaginary part in Fig. 7.3 should be labeled $|\chi_I|$. The imaginary part is negative for all $\omega > 0$, for the definition (7.8).

The formula $n = \sqrt{1 + \chi_R + i\chi_I}$ in the second paragraph in the text is incorrect. See the comments for Exercise 7.3 on p. 342, below.

p. 339
The right-hand side of the second line of Equation (7.14) should be multiplied by an overall $-$ sign. Also, the plot of $P(t)$ in Figure 7.5 should start at $P(0) = 0$ and rise in time for the first half cycle, not start at a maximum value.

p. 342
In Exercise 7.3, the formula $n = \sqrt{1 + \chi_R + i\chi_I}$ is incorrect for this case. To deduce the relevant n for the Fresnel equations, one can use the general formula $B_0 = E_0(k_R + ik_I)/\omega$ in Equation (3.79) in the derivation of the Fresnel equations. From Equations (7.9) on page 334, one obtains

$$\begin{aligned} k_I &= \frac{\omega}{\sqrt{2}c}\left(\sqrt{(1+\chi_R)^2 + \chi_I^2} - (1+\chi_R)\right)^{1/2} \\ k_R &= \frac{\omega}{\sqrt{2}c}\left(\sqrt{(1+\chi_R)^2 + \chi_I^2} + (1+\chi_R)\right)^{1/2}, \end{aligned}$$

and therefore in the Fresnel equations one should use

$$\begin{aligned} n_{\text{eff}} &= \frac{c(k_R + ik_I)}{\omega} \\ &= \left(\frac{\sqrt{(1+\chi_R)^2 + \chi_I^2} + (1+\chi_R)}{2}\right)^{1/2} \\ &\quad + i\left(\frac{\sqrt{(1+\chi_R)^2 + \chi_I^2} - (1+\chi_R)}{2}\right)^{1/2}. \end{aligned}$$

The phase velocity is given by $v = \omega/k_R$, which is not equal to c/n_{eff}.

In Exercise 7.4, the integral should be of $|\text{Im } \epsilon(\omega)|$ for the sum rule to give a positive value.

p. 348
Equation (7.38) and the one previous should have $\epsilon(\omega)/\epsilon_0$ in the denominator, not just $\epsilon(\omega)$.

p. 351
All of the Ω's in the matrix equation at the top of the page should be multiplied by $\sqrt{\omega_k/\omega_0}$.

p. 370
In the paragraph at the bottom of the page, the long-time limit should be $t \gg \hbar/\Delta E_m$.

p. 388
The Fröhlich matrix element in (8.29) should be $M^{\mathrm{Fr}}_{\vec{p}}$, not $M^{\mathrm{Fr}}_{\vec{k}}$.

p. 407
The second line of Equation (8.63) should read

$$\hbar\langle i|\frac{1}{\hbar\omega - H + i\epsilon}|i\rangle.$$

p. 408
The Green's function definition (8.67) should have an $\hbar$ in the numerator, i.e.,

$$G_{\vec{k}}(t) = -(i/\hbar)e^{-i(E'_{\vec{k}}-i\Gamma_{\vec{k}})t/\hbar}\Theta(t).$$

p. 412
In the first term of the first line of Eq, (8.76), the denominator should be

$$\Delta E + E_{\vec{p}} - E_{\vec{p}+\Delta\vec{k}} + i\epsilon,$$

i.e., $E_{\vec{p}+\Delta\vec{k}}$ should appear in both terms.

p. 413
Equation (8.79) should read

$$\begin{aligned}\Pi_{\Delta\vec{k}} &= \sum_{\vec{p}}\left[\frac{\bar{N}_{\vec{p}}}{\Delta E - \hbar^2\vec{p}\cdot\Delta\vec{k}/m - \hbar^2|\Delta\vec{k}|^2/2m} + \frac{\bar{N}_{\vec{p}}}{-\Delta E + \hbar^2\vec{p}\cdot\Delta\vec{k}/m - \hbar^2|\Delta\vec{k}|^2/2m}\right] \\ &= \sum_{\vec{p}}\frac{\bar{N}_{\vec{p}}\ (\hbar^2|\Delta\vec{k}|^2/m)}{-(\hbar^2|\Delta\vec{k}|^2/2m)^2 + (\Delta E - \hbar^2\vec{p}\cdot\Delta\vec{k}/m)^2}.\end{aligned}$$

The subsequent equation for the long-wavelength limit should be

$$\Pi_{\Delta\vec{k}} = \frac{N\hbar^2|\Delta\vec{k}|^2}{m(\Delta E)^2}.$$

(No minus sign.)

p. 414
The second-to-last term in the last equation should be

$$-\frac{1}{N}\frac{e^2n^2Adx}{\epsilon}$$

(missing e^2)

p. 421
The line before Equation (8.87) should have $E' = \langle\Psi'|H'|\Psi'\rangle$.
The line after Equation (8.88) should start, "Subtracting (8.88) from (8.87) implies"

p. 424
Exercise 8.22 should refer to Fig. 20 (no "(a)").

p. 440 Equation (9.37) should have a minus sign in front of the right-hand side. Note also that m_3 is defined opposite to U_3 in Section 9.3, since the spin-down state is the higher energy state.

p. 450
In the three equation lines before (9.53), there should be a factor $e^{i\omega_0\tau}$ instead of $e^{-i\omega_0\tau}$.

p. 486
The models in Figures 10.1 and 10.2 both assume a current of positively charged particles, and therefore the caption of Fig. 10.2 should read "Model of the orbit of a free charged particle leading to . . . ."

p. 518 In the 3rd full paragraph, the 4th sentence should begin, "If they have the same spin, ..."

p. 527
In next-to-last line, $U(\vec{r})$ should be $V(\vec{r})$.

p. 539
Equation (11.3) should have $-\beta\mu$ in the exponent in the denominator, i.e. the same $N_{\vec{k}}$ as in (11.2).

p. 544
(11.18) should read

$$E(\vec{k}) = \sqrt{E_{\vec{k}}^2 + 2E_{\vec{k}}L_{\vec{k}}}$$

p. 546
the last term in (11.23) should have V in the denominator.

p. 547 The second term on the right side of the equation before equation (11.25) should not have a factor 2 in the denominator.
The second term on the right side of the first and second lines of equation (11.25) should not have a factor 2 in the numerator.

The last line of equation (11.25) should read

$$= \frac{U}{V}\left(N^2 - NN_0 + \frac{1}{2}N_0^2\right).$$

p. 548
In the second line of the first full paragraph, $U\delta(\vec{k})$ should be $U\delta_{\vec{k},0}$.

p. 550
The minus sign on the right-hand side of last equation should not be there.

p. 551 The sentence after equation (11.36) should say "poles in the superfluid current."

p. 557
The first line of text after Equation (11.46) should read, "When $\vec{k} \to 0$, $E_k \to 0$ proportional to k^2...."
In the line before the third equation and in the line before the fourth equation, and in the fourth equation, T_k should be E_k everywhere.
In the fourth equation, in the middle term, the denominator should be 1, not L_k, for the limit of $1 - A_k^2$ at high k.

p. 560
On the right-hand side of the last line of (11.56), $\vec{K}$ and $\vec{K}'$ should be reversed everywhere.

p. 568
Two lines before Exercise 11.12, the absolute value should be used, i.e. $|\alpha| = \sqrt{N_0}$.

p. 569
The first paragraph after Exercise 11.12 should start "In Section 11.2.1,"

p. 587
Equation (1.105) is incorrect for nonzero $\vec{A}$. The correct argument to obtain (1.106) uses the fact that $\vec{J} = 0$ far away from a vortex. This follows from the form of the solution of (1.107), in which $B(r)$ falls as $e^{-r/\lambda}$ far from the center of a vortex, which since $(\nabla \times \vec{J}) \propto \vec{B}$ by the London equation, implies that $J(r)$ falls as $\lambda e^{-r/\lambda}$ (i.e., as the Bessel function $K_1(r/\lambda)$).

p. 589
The signs of the exponents of the phase factors in (11.109) should be reversed; i.e., in the first line the phase factor should be $e^{i(\theta_2-\theta_1)}$ and in the second line $e^{i(\theta_1-\theta_2.)}$

In (11.110) the factor should be $\sin(\theta_2-\theta_1)$. (J gives the direction of positive current in (11.111), opposite to the electron current, and is therefore correct.)

p. 592

Two lines before Eq. (11.115), the equation should read $\nabla^2 E = -k^2 E = -(\omega^2/c^2)E$. (Missing E.)

p. 594

Equation (11.119) for $P(t)$ should have $\hbar$ in the denominator of the overall prefactor.

On the right-hand side of the equation after Eq. (120), the exponential factors should be $e^{-i\omega t}$.

The signs of the last two terms in the equation before (11.121) should be reversed.