

Typos and other corrections for draft 1 of 504 notes

- (1) Eq. (2.59), (2.65), (2.67), (2.70), (2.73) the $\hbar$ should be an h .
- (2) I noticed that you have asked us to let you know of any errors that we may find in the lecture notes pdf. I assume that Eq. 2.107 is meant to be $P = \sum P_k f_k$ and not $P_k = \sum P_k f_k$. (Aaron Blackman)
- (3) Some small things on p25. Eq. 2.120 $\Gamma(E) \rightarrow \Gamma(E_1, E_2)$. At the end of the paragraph that follows $\Gamma_2 \rightarrow \Gamma_2$. Eq. 2.121 same as Eq. 2.120. Eq. 2.123 looks like it has $S_1 S_2$ when it is $S_1 + S_2$. Also, would you mind recompiling with `\usepackage{hyperref}` please? Thanks (Yubo Yang)
- (4) Equation 2.187 (page 37) $\rightarrow$ without - sign. The last term of the equation 2.189 (page 37) needs - sign. Equation 2.266 (page 51) Q_N goes up to the n <https://www.gradescope.com/courses/217979/questions/7619462/submissions/merator>. (JiYoung Kim)
- (5) Equation 2.286 (page 55), $f(E) \rightarrow f(E + E_f)$ (Sangwoo Park)
- (6) Equation 2.271 (page 52), $e^{\{-\beta(\epsilon_i - \mu_{n_i})\}} \rightarrow e^{\{-\beta(\epsilon_i - \mu) n_i\}}$ (Wei Chen)
- (7) Equation 2.300 & Equation 2.301 (page 57), $e^{\{-\beta \epsilon_i - \mu\}} \rightarrow e^{\{-\beta(\epsilon_i - \mu)\}}$ (Wei Chen)
- (8) Equation 2.147 The total number of accessible quantum states for the joint system should have a multiplication sign instead of a plus sign (Zuhao Hua)
- (9) Equation 2.142. After the last equality sign, the equation is missing E_i . (Zuhao Hua)
- (10) Equation 2.158. There is a missing minus sign before $E_i/k_B T$. (Zuhao Hua)
- (11) Equation 2.303. The 2 in the denominator is wrong. It should be 8. I think... (Duncan Nall).
- (12) Many typos on 2.407 (Nall)
- (13) 2.408 should not have η outside the bracket (Nall).
- (14) 2.421... not quite sure why it is a sum and not a pi product under the integral sign (Nall).
- (15) On page 97 (section 3.1) $N^?V$ is written. I believe N/V was intended (Nall).
- (16) 3.20 LaTeX typo (Nall)
- (17) 3.20-3.21 r_i should be r_{ij} in the numerator. Otherwise, the rest is very confusing. (Nall)
- (18) 3.23 LaTeX typo (Nall)
- (19) 3.81 Sum missing in exponent in third step of this equality (Nall).
- (20) 3.79 incorrectly references equation 2.166 instead of 2.265 (nall)
- (21) To get equation 3.80, the trick is not from 2.199, but rather 2.298 (Nall)
- (22) 3.44, 3.47 LaTeX typo ($\frac{\quad}{\quad}$) (Rinat)
- (23) 3.135; α should be switched to a . (Nall).
- (24) 3.191 The first two terms in the equation should be combined by addition but not multiplication. (Zuhao)
- (25) P. 154 paragraph 2 "whose origins us the degrees of freedom"??? (Nall)
- (26) 4.3. I think there should be a "+" sign between the $O(\tau^3)$ and the first time derivative term. (Nall)
- (27) P. 126 (first paragraph). "the kinetic energy is as we saw in 3.151" I believe it should reference 3.141 (Nall).
- (28) 3.162 $\hbar$ should be squared (Nall).

- (29) 3.191 Should be a (+) after the H (Nall).
 (30) I think 3.187 should be a derivative with respect to H.
 (31) 3.143 The minus sign should be an equal sign. (Zuhao)
 (32) Eq 2.8 There should be dS, dN, dV after each partial derivative. (Minhui Zhu)
 (33) Eq 2.15, 2.16, E should be dE; 2.16, the second S's subscript should be 2. (Minhui)
 (34) Eq 2.38 It lacks a summation before the delta. (Minhui)
 (35) Eq 2.45 The delta function should be inside the integral of E; Eq 2.46, still, inside the integral there should be a delta. (Minhui)
 (36) Eq 2.59, 2.65, 2.70, in the denominator the $\hbar$ should be h. (Minhui)
 (37) Eq 2.299 $(\mu - e_i) \cdot n_i$ should be in the exponent (Zhiru)
 (38) Why are equation 2.65 and equation 2.70 the same??? Shouldn't that expression be $d(\gamma)/dE$???

Eq 2.53, the integration variables are $d^3 q_i$, not $d^3 k_i$. (JiYfoung Kim)

- (39) Eq 2.400 It should be $(k_B T)^4 / (\hbar c)^3$ (Zhiru)
 (40) Eq 2.8 dN, dV and dS are absent. (Zhiru)
 (41) Eq 2.15,16 It should be dE1 instead of E1. There are also errors in subscripts.

(42)	Pg	Eq.	Comment
(43)	9	2.8	dS, dN, dV missing
(44)	10	2.15	$dE_{\{1\}}$ instead of $E_{\{1\}}$,
(45)	10	2.16	
(46)	13	2.38	sum over i
(47)	13	2.39	$\{n_i\} > 0$
(48)	15	2.45	$\int E_1 E_2$ then $\delta^D()$
(49)	15	2.46	δ^D missing
(50)	16	2.53	dk should be replaced by dq
(51)	17	2.59	h not $\hbar$
(52)	17	2.65	h not $\hbar$
(53)	18	2.67	h not $\hbar$
(54)	23	2.107	LHS, no sub k
(55)	24	2.111	2 is the spin multiplicity with $s=1/2$
(56)	25	2.123	RHS should be $S_1(E_1^0) + S_2(E_2^0)$
(57)	32	2.142	extreme RHS missing E_i
(58)	33	2.158	$-E_i / (k_B T)$
(59)	37	2.187	not negative
(60)	40	2.205	log missing
(61)	40	2.206	log missing
(62)	40	2.112	sum missing
(63)	44	2.228	suffix i for $\bar{p}$, $\bar{q}$
(64)	44	2.229	suffix i for $\bar{p}$, $\bar{q}$
(65)	44	2.230	suffix i for $\bar{p}$, $\bar{q}$
(66)	45	2.238	negative sign
(67)	70	2.388	makes no sense
(68)			

(69)	73	2.407	
(70)	73	2.408	What is d?
(71)	74	2.417	
(72)	75	2.421	$\langle n_i \rangle^2$ or $\langle n_i^2 \rangle$ and why sum over f?
(73)	75	2.422	$\langle n_i \rangle^2$ or $\langle n_i^2 \rangle$
(74)	99	3.19	r_i^{α} ? and r_{ij}^2 ? and $2 r_{ij}$ as coeff?
(75)	99	3.20	makes no sense
(76)	99	3.23	
(77)	99	3.26	
(78)	102	3.44	
(79)	102	3.47	
(80)	102	3.49	$i=1$? and $j=2$?
(81)	102	3.51	missing the integration sign in LHS?

Typos:

pp. 2: "od symmetry laws" should be "of symmetry laws"

pp. 3: "This brings is" should be "This brings us"

pp. 8: The middle figure t axis should be " $d \ll \Lambda \ll d$ " should be " $d \ll \Lambda \ll L$ " (Kangqi Fu Courant Math Ph.D.)

pp. 9: "If all quantum stated" should be "If all quantum states"