This page contains all known corrections and suggestions to the 6th and later printings.

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.The corrections are usually set off by *** ***, any comments on the corrections follow

These first entries were posted in early May 2005 Any additions since then have the page numbers in boldand, usually also have the date the correction was posted.

Last revision was made 4 April 2010

page#	Correction
Cover	The cover picture shows the motion of a particle under central forces. There is a $1/r^3$ attractive and a $1/r^4$ repulsive force. or another possibility is an $1/r^2$ attractive and a $1/r^3$ repulsive force. As discussed in Section 3.6 the orbit does not close. Special thanks to Thomas Fischaleck and Ian Gatland for pointing this out to us.
	CHAPTER 1
4 - 7/Sept/06	2nd line ***...friction is always negative and***
5	last line *** ...forces, if they obey ...
6	First full sentence following Eq. 1.23 *** of mass, (1.22), can be restated***
8	First line:***Equations (1.22 and (1.26)***
14	Tltle for Figure 1.4 *** Double plane pendulum
15-9/Apr 09	It has been pointed out that Fig. 1.5 has had a geometric inconsistency since the 1st Edition. To agree with the viewpoint of the xy-axis, **v** would need to be parallel to the x-axis. A proper perspective drawing with y parallel to v would be better.
16	3rd line from bottom *** ... *consistant with the constraints* ...*** (virtual displacements need not be consistant with the forces)
20	In the first display expression above Eq. (1.52) delete the $-Q_j$ term. This only an expansion of the preceding expression below (1.51)
20	2nd line below Eq(1.52) -- no correction needed
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21	2nd line above Eq. (1.57') ***is an appropriate Lagrangian ...***
23	Eq. (1.67) -- the x, y, and z in k_x, k_y, and k_z should all have the subscript i .
24	Eq. (1.68) -- add the subscript i to the grad_v
24 - 5 Oct 07	Eq, (169) -- since the sum is over all i, add the subscript i to the grad_v in all places and to all sum signs
24	ling below Eq. (1.69) don't start a new paragraph and change line ending to *** ... moving at a velocity $\boldsymbol{v}$, *** (vector not scalar)
24	line above Eq. (1.70) --- start a new paragraph
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27-Aug 07	Fig. 1.6 caption replace r by $\boldsymbol{r}$
27	line below figure *** make Greek theta bold face *** it is a vector
29	last text section above the Derivations *** the solution is made more general by replacing exp(wt) with r_o cosh(wt) and even a sum of cosh and sinh, replacing the expontial term in the angular momentum by $\cosh^2(wt)$ + ... and in the force F replace exp(wt) with sinh(wt), (In the preceeding w is the lower case Greek omega).***

31 - 10 Apr 08	First equation in Exercise 9 -- t should not be bold
31 19/10/06	Derivation 9: Remove the 1/c in the phi transformation. Wrong units for eqns. on pg. 22
32 25/6/09	Exercise 20 -- Equation --rhs, 2nd term should be – not +
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36	add above Figure ***Eq. (2.3) assumes that x is unidirectional between x_1 and x_2. Otherwise the integral must be broken into undirectional sub-integrals and the results algebraicly added.
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47	All lower case mass "m" should be "M". In line 3 of the second paragraph, x/r = sin(theta), this makes z = -r cos(theta), this changes a sign in cos(theta) term of the second Lagrange equation. In the second of the display equations in this paragraph, the right hand side should be divided by a.
47	replace footnote ***J. Ray, *Amer. J. Phys.* 34 (1202), 1966; A detailed discussion of nonholonomic constraints is given by M.R. Flannery, "The enigma of nonholomic constraints", *Amer. J. Phys*. **73** (3), March 2005, pp. (265-272) 2005***
48	first line should read ***...(2.26). These two sets (Eq. (2.25)***
48 - 5 Oct 07	line below Eq. 230c ***((2.29 and (2.30))***
49	First line of paragraph containing Eq. (2.35) and line following that equation:add equation (2.24) so it reads ***Eqs. (2.20) or (2.24) ***
50 11/Apr/08	add to Eq. 2.36 *** -lambda(r (Theta)dot - x*dot) ***
54 26/6/09	Equation at top of page -- rhs, last term -- replace e by E
63 - 7/Sept/06	Equation above (2.59) -- insert minus (-) sign on right hand side
65 - 23/Mar/07	Exerise 7:Change text to***In Example 2 of Section 2.2, we considered the problem of the minimum surface of revolution. Examine the symmetric case $x_1 = x_2$, $y_2 = -y_1 > 0$. Express the condition for the parameter a as a transcendental equation in terms of the dimension-less quantities $k = x_2/a$ and <beta> = y_2/x_2. Show that there is a value <beta>$_0$ for which only one value of k is possible, a range of values of <beta> for which there are two solutions for k and ranges of <beta> and k for which no solutions exist; so no catenary solution exists for those ranges. Find the value of <beta>$_0$, numerically if necessary.
67 4/22/10	The exponent of e should be : *2(Gamma)t/2*
68 - 22/8/06	Exercise 21 - 2nd line ***...force constant K whose***
69 - 19/8/06	Exercise 26 - 1st line ***...by a massless string of length...***
	CHAPTER 3
73	line following Eq. (3.8) *** ... From (3.7) it also ***
76	First line, Sec. 3.3: ***solved the equivalent one-body problem***
92	2nd line, first full paragraph:***still give closed orbits?***

104	Fig. 3.18 The vectors titled *mk* should be multiplied by a unit vector in the **r** direction
115 - 22/8/06	8th text line -- the first greek theta should match the symbol on the 4th line
118-Aug 07	line following Eq. (3.112)***Unless there are excited internal degrees of freedom in the so-called *Q* ***
120	10th line from the bottom ***...momentum is conserved (and ***
120-122	both figures are drawn with ellipses having the same eccentricity.
124 - 9/Sept/06	6th line above figure ***...local potential extremum*** 4th line above figure ***energy is a maximum only...*** 4th line above figure ***...axis, and increases in directions***
126 - 22/8/06	Derivation 1, line below equation ***provided the motion...***
126 - 4/24/10	Derivation 3. First Equation needs a minus sign on the right hand side and in the last fullequation last equation, rhs, the first sine is cubed: e^3 $\sin^3$ (*(omega)t...*
126 -29/9/06	Derivation 4, equation at the bottom of the page. Remove the ^{2} from the (1-V/E) and add it to the last term ***...$s^2(1\text{-rho}^2)^2$***
127 9/4/09	Derivation 6 ***drops off monotonically***
129 - 1/11/06	Exercise 19b, 2nd line, *** by pi([*rho]/a*)^2 per revolution,...***
129-9/4/09	1st line-- *** Yukawa ***
130 - 1/11/06	Exercise 21: change Show that ... to Consider... Add a period after the next equation and delete the two lines following lines. First line after the second equation change to ***...precess (after the correction of 5600" for known...***
131	Exercise 28a: Delete the "c" from 2nd term, right hand side.
	CHAPTER 4
137 - 22/8/06	Eq. (4.2) -- delete the 2nd column in the set of equations -- also on line following Eq. (4.3) ***,,,nine direction cosines...***
136	delete first two words below the title for Fig. 4.2. (a repeat from preceeding page)
137	Eqs. (4.2) -- Delete last equals and contents for all equations.
160 mod 8/4/09	Eq. (4.31) Show the ***summation over the subscript *i* in the second equation***
168 - 22/8/06	The S in the first unmumbered equation should not be bold.
170 - 22/8/06	Caption for Figure 4.12 the *x*', *y*', and *z*' should not be bold
171 - 22/8/06	End of section 4.9 -- move the period to after the ")".
173 - 22/8/06	3rd line -- the epslon should not be bold.
176	Eq. at bottom of page add ***s^{-1} ***corrects units
181 - 7/22/07	Problem 13 - second sentence should read***Show that Phi1/2, Phi2/2 and Phi/2 can be considered*** All angles should be divided by 2. This is the half angle formula.
	CHAPTER 5
184 - 22/8/06	8th line ***between the change of states...***
194 - 22/8/07 &	Last sentence on page ***...tensor possess a type of symmetry relative to the center...***

9/4/09	
197 - 22/8/07	second line above Eq. (5.35) ***desiginated as the *inertia ellipsoid*.***[tensor not tenson]
200	Sec. 5.6, third line ***at rest or moving uniformly***
206 24/6/09	2nd line in Eqn.(5.47) ,both sides (2 places) replace I_1 with I_2
209 - 22/8/07	Last symbol in the first complete pargaraph on page... This symbol should be the same *l* used in Fig, 5.7. That is ***point will be denoted by *l*.***
214	3rd line following figure caption ***...only when *f*(*u*) is positive...***
221	4th line following the figure caption ***the third root u_3 is then less than ***
225 - 22/8/06	2nd line after 3rd unnumbered equation. The I should be bold not italic.
233 - 29/9/08 **revised 5/25/07**	Derivation 5 starting with Eqs. (5.39) are replaced by (there are two terms in the rotating frame) Do not sum on "i" in the first equation but sum over "j" and "k". So the first equation is three equations one each for i = 1, 2, 3.. $$\frac{d(L\omega)_i}{dt} + \varepsilon_{ijk}\omega_j\omega_k L_k + \frac{dI}{dt}_i + \varepsilon_{ijk} I_j \omega_k = N_i, \qquad i = 1,2,3$$ where (for the coordinate system chosen $$L_{total} = L + I, \quad L_i = \int dV\, \rho(r)\, \varepsilon_{ijk}\, x_j v'_k, \quad I_{ij} = I_i \delta_{ij}$$
	CHAPTER 6
243 - 22/8/06	line after Eq. (6.20) -- reference should be to Eq. (6.20)
244 - 22/8/06	5th line after Eq. (6.23 ***Eqs. (6.12) and (6.22a)...***
245	Eq. (6.26') the **V** in this equation is the transformed diagonal **V**
245	4th line after Eq. (6.26') *** coordinates ***
250 - 22/8/06	4th line after Eq. (6.35) The second subscript should be a lower case *k*.
252	immediately above Eq. (6.47) ***Equations (6.46)...***
257 - 22/8/06	7th line in last full paragraph ***...molecule is classically meaningless...***
268	last line of title for Fig. 6.7: ***...case $omega_c$ <<...***
269	Inside Figure 6.8 the *i* subscript ($omega_i$) should be *(*$omega_o$)
271	8th line from the bottom. Equation reference should be (6.92) not (6.93)
	CHAPTER 7

281 4/22/10	Equation on line before Eq.(7.10): **r** and **r'** should be italic *r* and *r′*
283	Eq. (7.16) -- replace (...) with [...] -- this is a matrix
284 24/6/09	Second text line above Eqn. (7.19) replace Since with since
284 - 22/8/06	next to last line Eq. 4.43 also -- S_I should not be bold
285 - 22/8/06	line below Eq. (7.24) ***... is frequently***
288 - 22/8/06	In Eq. (7.32') ***$(ds)^2$ = ...***
291 - 22/6/06	4th line following Eq. (7.34') remove ")" following coordinates.
293	9th line from bottom *** (E/c, **p**) is a ...*** E should not be bold
311 - 22/8/06	3rd line above Eq. (7.129) ***inition of Eq.(7.128) the reference...***
316	line before Eq. (7.146)***velocity in the *x* direction as
316	3rd line from bottom-- Note that the E contains mc^2 as shown at the top of page 317
317	Eq. (7.150) inside "[" *** [1+ ...***
317 - 22/8/06	line below Eq. (7.15) ***The integral in ...***
317	Eq. below (7.150) inside "(" *** (1+...***
317	Eq. (7.151) replace "3" by "-3"
327 - 22/8/06	last full paragraph -- delete the last word (existing)
329- 21/8/07	Derivation 7, center equation of the three in this problem. The numerator should be a_y
332 24/6/09	Second line in Exercise 29- replace (7.17) with (7.18)
332 - 22/8/06	last line -- ***...the Schwarzschild so-***
	CHAPTER 8
334	last line on page: Delete the words ***problem in *n* inde-*** A repair for the repeat in the top line on 335.
339	Eqs. (8-24a) & (8-24b) Middle terms use [ ] around the row matrix.
341-21/8/07	Eq. (8.28'), next to last term. space is needed after the $\sin^2$theta.
341-21/8/07	3rd line from bottom should read $L = T - U$ =...
342-21/8/07	second paragraph:*** Because of this linear term in U, the Hamiltonian is not $T + U$. However, it is still in this case the total energy, $T + V$ since the"potential "energy...****
349 - 22/6/06	4th line after last equation ***advantage. It is ...***
360 - 22/8/06	Eq. (7.32') ***$(ds)^2$ = ...***
361 - 22/8/06	2nd line -- ***...(cf. Eq. (7.32'))***
364 - 11/Apr/08	Exercise 16 Equation *** H = p^2/2a ...***
265 24/6/09	Eqn. in part)b) – no minus sign
366 - 22/8/06	3rd line from bottom ***...of the particles with ...***
	CHAPTER 9

373 29/8/06	line below Eq. (9.16) the P_i at the end of the line should have a "dot" over it.
276 29/9/06	Equation above (9.30) interchange the off disgonal elements Equation below (9.30) interchange the two off diagonal elements
377-9/4/09	Eq. (9.32a): The subscript on F should be 1.
378 - 22/8/06	footnote: 3rd line from bottom: the alpha should be a lower case omega.
380	Fig. 9-1(d) Label the vertical axis *** P *** capital letter
384 24/6/09	Near the middle of the page 3,3 element in Matrix **M** should be -1
389	last unnumbered display Eq. on page: replace the *u* in the first partial with *v*.
391	3rd line, 2nd display equation. The partial derivative in the numerator should be of second order.
391	line following Eq. (9.77):***...the derivative with respect to...***
391 - 22/6/06	6th line from bottom the *J* should be **J**
392	line following Eq. (9.77):***generally noncommutive...***
393	Eq. (9-81) there should be a "," between all the *p* and *q* subscripts.
395 - 22/8/06	Eq. (9.89) Second equation $F^1(q, Q)$
397	line above Eq. (9.96) ***Eq. (9.67) we have ***
397	line following Eq. (9.96) *** ...way of writing Eq. (8.39). ...***
401	replace the "," after *U(q,p)* with a "."
402	line following Eq. (9.106):***...equation of motion Eq. (9.94),...***
404	Eq. (9.114) ***(***r*** x ***p***)*** vectors
411 - -11 Apr-08	First eqation --- p should be bold & italic
415 - 22/8/06	Eq. (9.137) the A should be **A**
417 - 22/8/06	line below Eq. (9.147) *** By straightforward manipulation...***
422 - 21/8/07	in problem 7(b) *** *F3* type for the identity transformation*** and *** *F4* type for the exchange transformation***
423 -22/08/06 21/8/07	2nd line from top, 2nd equation $P_2 = -2q_1 - q_2$ First line of problem 12 ***for a canonical transformation are given***
425 24/6/09	equation should read qB/m in SI units or qM/mc in Gaussian units
426 - 11/Apr/08	Exercise 27a -- equation *** ... = (1/2)(xi)^T S (xi) ***
429 25/6/09	Exercise 41 – an example of the constant epslon could be a charge *q*
	CHAPTER 10
431	Eq. (10.3)first of the terms involving the partials of F_2 the q_i should be q_1
434 4/21/10	Last term in equation 10.14 should read *** (*alpha) t* ***
436	5th line above Eq. (10.30):***...Hamilton's principal function...***
438	2nd line from bottom-- replace *F* by *W*
439	second of Eqs. (10.41) -- replace 2 inside square root by 4
444	line above Eq. (10.49)***are separable. In this case a solution...***
444	Eq. (10.50) *** H_j(... ***

451 - 21/8/07	Eq. (10.74'), numerator of the 2nd term on the lhs. The subscropt should be phi 3rd line after equation (10.77) ***Equation (10.76) says the *z*-component of the ***
459 -22/8/06	5th line after Eq. (10.106) ***...variables imply that ...***
460 - 22/8/06	In Eq. (10.110') the second *a* in the right hand side should be *e*
461 - 22/8/06	2nd line above Eq. (10.115) ***separable variable pairs...***
463 - 22/8/06	Eq. (10.119) the limit is taken as *T* goes to the limit
464 - 22/8/06	3rd line after Eq. (10.121) ***...If only *m* of the *n****
465	After the Sum symbol ***$j_{ki}\ w_i$
467 - 22/8/06	3rd line from bottom replace "integral over" by "integral of theta"
478 25/6/09	Derivation #4: all the terms of the form J/Pi should have a square root on them.
478	3rd line of Exercise 5 ***...of the Hamiltonian-Jacobi equation for...***
480 25/6/09	Last line Exercise 16 should ;;;less than or equal to Pi/2
482 25/6/09	Delete the primes (') on all the *J*'s.
	CHAPTER 11
484	Insert Above 11.1**We have skipped the field of complexity which is the range of problems which are not chaotic, but are too complex for reliable predictions using the methods developed in the preceding and following chapters.
488 - 22/8/06	first of Eqs. (11.10) - the P_1 should be P_i
499 - 22/8/06	3rd line above Eq. (11.25): there should be a plus/minus sign in front of 0.408
505 - 22/8/06	6th line in Section 11.7 ***...set of 2*N* first-order...***
514 - 22/8/06	In Eqs. (11.39) through (11.41b), all subscipt n should be italic. Also in the 3th through 6th lines following Eq. (11.41b)
	CHAPTER 12
528	Eq. (12.5) --- replace the subscript "*i*" on the rhs by a subscript "*1*"
530	Eqs. (12.20) -- first equation, last term --omega is raised to the 4th power
531	Eqs. (12.21) -- first equation, last term --omega is raised to the 5th power
532	footnote -- delete 5th word.
533 - 22/8/06	End of second line -- there should b a dot over c_i to indicate derivative Also in the equation following the second set of brackets shloud be "[...]" not "{...}"
534	3rd equation on the page, 3rd term -- ***...)^4 ...***
537	extend bar over entire left hand side term
542	Eq. (12.64) 3rd term on rhs is epsilon^2
542	line below Eq. (12.66) -- replace *a* by lower case Greek alpha
543	Eqs, (12.71b) and (12.71c) -- the bold $\mathbf{v}_o$ should a bold (Greek**)** $\mathbf{nu}_o$
545 22/8/06	9th line above Eq. (12.80) ***the 19th century...***
546	Equation below (12.28b) replace *H* by *J*
	CHAPTER 13

562 26/6/09	right hand side of (13.14) replace *a* with greek alpha
563 - 22/8/06	last symbol on page should be an italic greek symbol mu.
567 - 30/11/06	Eq. (13.28) - lhs - 2nd term -- raise the greek nu
571 - 30/11/06	7th line ***-T_i with components -T_i^j ***
571 - 22/8/06	3rd line above Eq. (13.44) ***...vector, we expect...***
573 - 30/11/06	following Eq (13.54) to the end of the page - Pi index must be superscript and eta index must be subscript.
578 - 30/11/06	3rd line DELETE (and therefore H) and at the end of the line ***should be a scalar***
584 - 30/11/06	Eq. 13.101 - rhs -add a comma before the greek nu in the second term
594 - 22/8/06	Eq. (13.145) second term on the right hand side: the denominator should have the partial derivative symbol.
600 26/6/09	Last integral -- upper limit should be *x* not infinity.
	APPENDIX A
603 - 23/Mar/07& 9 Apr/09	Eq. (A.11xyz): Lower left matrix element, second term, replace sin <theta> with sin <phi> Also the (1,1) term should be -cos<theta> cos<phi>
	APPENDIX B
606	Middle display Eq. (B.1) *** $i^3 = -i$ ***
608	First line after Eq. B11: ***whose only solution is $l_1 = l_2 = 1$***
611	Renumber Table B.5 to B.4 and Table B.4 to B5. On line above what was originally B.5 add*** See table B.4*** 5th line below second table (was B.5 now B.4) ***In Table B.5 the ...***
	SUGGESTED BIBLIOGRAPHY
617	Reference to Hestenes should include 2nd Ed.
619	First reference on Chapter 11 -- author's name should read ***Hao Bai-Lin*** as per the edition referenced. Chinese name order also appears as Bailin Hao and Hao Bailin
	AUTHOR INDEX
624	Lorenz, E.N., 523 Lorentz, H. A. 577
632	Lagrange multipliers, 16, 46, 67
637	delete page 339 from reference "Symplectic,approach"

Contributors to the above (in alphabetical order) are
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If I have left on a name, please notify me. Page maintained by John Safko

This page resides at http:astro.physics.sc.edu/goldstein/

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46-47	Eqs. 2.20, 2.21, 2.23, 2.26- and 2.27 all summation subscripts should be greek/symbol alpha as should the subscript if a in eq. 2.25. line following Eq. 2.23: The subscripts of both Q should be the same. 2nd line following Eq. 2.25 for clarity ***...are possibly functions of all the...***
47	All lower case mass "m" should be "M". In line 3 of the second paragraph, x/r = sin(theta), this makes z = -r cos(theta), this changes a sign in cos(theta) term of the second Lagrange equation. In the second of the display equations in this paragraph, the right hand side should be divided by a.
47	replace footnote ***J. Ray, *Amer. J. Phys.* 34 (1202), 1966; A detailed discussion of nonholonomic constraints is given by M.R. Flannery, "The enigma of nonholomic constraints", *Amer. J. Phys*. **73** (3), March 2005, pp. (265-272) 2005***
48	first line should read ***...(2.26). These two sets (Eq. (2.25)***
48 - 5 Oct 07	line below Eq. 230c ***((2.29 and (2.30))***
49	First line of paragraph containing Eq. (2.35) and line following that equation:add equation (2.24) so it reads ***Eqs. (2.20) or (2.24) ***
50 11/Apr/08	add to Eq. 2.36 *** -lambda(r (Theta)dot - x*dot) ***
54 26/6/09	Equation at top of page -- rhs, last term -- replace e by E
63 - 7/Sept/06	Equation above (2.59) -- insert minus (-) sign on right hand side
65 - 23/Mar/07	Exerise 7:Change text to***In Example 2 of Section 2.2, we considered the problem of the minimum surface of revolution. Examine the symmetric case $x_1 = x_2$, $y_2 = -y_1 > 0$. Express the condition for the parameter a as a transcendental equation in terms of the dimension-less quantities $k = x_2/a$ and <beta> = y_2/x_2. Show that there is a value <beta>$_0$ for which only one value of k is possible, a range of values of <beta> for which there are two solutions for k and ranges of <beta> and k for which no solutions exist; so no catenary solution exists for those ranges. Find the value of <beta>$_0$, numerically if necessary.
67 4/22/10	The exponent of e should be : *2(Gamma)t/2*
68 - 22/8/06	Exercise 21 - 2nd line ***...force constant K whose***
69 - 19/8/06	Exercise 26 - 1st line ***...by a massless string of length...***
	CHAPTER 3
73	line following Eq. (3.8) *** ... From (3.7) it also ***
76	First line, Sec. 3.3: ***solved the equivalent one-body problem***
92	2nd line, first full paragraph:***still give closed orbits?***

104	Fig. 3.18 The vectors titled *mk* should be multiplied by a unit vector in the **r** direction
115 - 22/8/06	8th text line -- the first greek theta should match the symbol on the 4th line
118-Aug 07	line following Eq. (3.112)***Unless there are excited internal degrees of freedom in the so-called *Q* ***
120	10th line from the bottom ***...momentum is conserved (and ***
120-122	both figures are drawn with ellipses having the same eccentricity.
124 - 9/Sept/06	6th line above figure ***...local potential extremum*** 4th line above figure ***energy is a maximum only...*** 4th line above figure ***...axis, and increases in directions***
126 - 22/8/06	Derivation 1, line below equation ***provided the motion...***
126 - 4/24/10	Derivation 3. First Equation needs a minus sign on the right hand side and in the last fullequation last equation, rhs, the first sine is cubed: e^3 $\sin^3$ (*(omega)t...*
126 -29/9/06	Derivation 4, equation at the bottom of the page. Remove the ^{2} from the (1-V/E) and add it to the last term ***...$s^2(1\text{-rho}^2)^2$***
127 9/4/09	Derivation 6 ***drops off monotonically***
129 - 1/11/06	Exercise 19b, 2nd line, *** by pi([*rho]/a*)^2 per revolution,...***
129-9/4/09	1st line-- *** Yukawa ***
130 - 1/11/06	Exercise 21: change Show that ... to Consider... Add a period after the next equation and delete the two lines following lines. First line after the second equation change to ***...precess (after the correction of 5600" for known...***
131	Exercise 28a: Delete the "c" from 2nd term, right hand side.
	CHAPTER 4
137 - 22/8/06	Eq. (4.2) -- delete the 2nd column in the set of equations -- also on line following Eq. (4.3) ***,,,nine direction cosines...***
136	delete first two words below the title for Fig. 4.2. (a repeat from preceeding page)
137	Eqs. (4.2) -- Delete last equals and contents for all equations.
160 mod 8/4/09	Eq. (4.31) Show the ***summation over the subscript *i* in the second equation***
168 - 22/8/06	The S in the first unmumbered equation should not be bold.
170 - 22/8/06	Caption for Figure 4.12 the *x*', *y*', and *z*' should not be bold
171 - 22/8/06	End of section 4.9 -- move the period to after the ")".
173 - 22/8/06	3rd line -- the epslon should not be bold.
176	Eq. at bottom of page add ***s^{-1} ***corrects units
181 - 7/22/07	Problem 13 - second sentence should read***Show that Phi1/2, Phi2/2 and Phi/2 can be considered*** All angles should be divided by 2. This is the half angle formula.
	CHAPTER 5
184 - 22/8/06	8th line ***between the change of states...***
194 - 22/8/07 &	Last sentence on page ***...tensor possess a type of symmetry relative to the center...***

9/4/09	
197 - 22/8/07	second line above Eq. (5.35) ***desiginated as the *inertia ellipsoid*.***[tensor not tenson]
200	Sec. 5.6, third line ***at rest or moving uniformly***
206 24/6/09	2nd line in Eqn.(5.47) ,both sides (2 places) replace I_1 with I_2
209 - 22/8/07	Last symbol in the first complete pargaraph on page... This symbol should be the same *l* used in Fig, 5.7. That is ***point will be denoted by *l*.***
214	3rd line following figure caption ***...only when *f*(*u*) is positive...***
221	4th line following the figure caption ***the third root u_3 is then less than ***
225 - 22/8/06	2nd line after 3rd unnumbered equation. The I should be bold not italic.
233 - 29/9/08 **revised 5/25/07**	Derivation 5 starting with Eqs. (5.39) are replaced by (there are two terms in the rotating frame) Do not sum on "i" in the first equation but sum over "j" and "k". So the first equation is three equations one each for i = 1, 2, 3.. $$\frac{d(L\omega)_i}{dt} + \varepsilon_{ijk}\omega_j\omega_k L_k + \frac{dI}{dt}_i + \varepsilon_{ijk} I_j \omega_k = N_i, \qquad i = 1,2,3$$ where (for the coordinate system chosen $$L_{total} = L + I, \quad L_i = \int dV\, \rho(r)\, \varepsilon_{ijk}\, x_j v'_k, \quad I_{ij} = I_i \delta_{ij}$$
	CHAPTER 6
243 - 22/8/06	line after Eq. (6.20) -- reference should be to Eq. (6.20)
244 - 22/8/06	5th line after Eq. (6.23 ***Eqs. (6.12) and (6.22a)...***
245	Eq. (6.26') the **V** in this equation is the transformed diagonal **V**
245	4th line after Eq. (6.26') *** coordinates ***
250 - 22/8/06	4th line after Eq. (6.35) The second subscript should be a lower case *k*.
252	immediately above Eq. (6.47) ***Equations (6.46)...***
257 - 22/8/06	7th line in last full paragraph ***...molecule is classically meaningless...***
268	last line of title for Fig. 6.7: ***...case $omega_c$ <<...***
269	Inside Figure 6.8 the *i* subscript ($omega_i$) should be *(*$omega_o$)
271	8th line from the bottom. Equation reference should be (6.92) not (6.93)
	CHAPTER 7

281 4/22/10	Equation on line before Eq.(7.10): **r** and **r'** should be italic *r* and *r′*
283	Eq. (7.16) -- replace (...) with [...] -- this is a matrix
284 24/6/09	Second text line above Eqn. (7.19) replace Since with since
284 - 22/8/06	next to last line Eq. 4.43 also -- S_I should not be bold
285 - 22/8/06	line below Eq. (7.24) ***... is frequently***
288 - 22/8/06	In Eq. (7.32') ***$(ds)^2$ = ...***
291 - 22/6/06	4th line following Eq. (7.34') remove ")" following coordinates.
293	9th line from bottom *** (E/c, **p**) is a ...*** E should not be bold
311 - 22/8/06	3rd line above Eq. (7.129) ***inition of Eq.(7.128) the reference...***
316	line before Eq. (7.146)***velocity in the *x* direction as
316	3rd line from bottom-- Note that the E contains mc^2 as shown at the top of page 317
317	Eq. (7.150) inside "[" *** [1+ ...***
317 - 22/8/06	line below Eq. (7.15) ***The integral in ...***
317	Eq. below (7.150) inside "(" *** (1+...***
317	Eq. (7.151) replace "3" by "-3"
327 - 22/8/06	last full paragraph -- delete the last word (existing)
329- 21/8/07	Derivation 7, center equation of the three in this problem. The numerator should be a_y
332 24/6/09	Second line in Exercise 29- replace (7.17) with (7.18)
332 - 22/8/06	last line -- ***...the Schwarzschild so-***
	CHAPTER 8
334	last line on page: Delete the words ***problem in *n* inde-*** A repair for the repeat in the top line on 335.
339	Eqs. (8-24a) & (8-24b) Middle terms use [ ] around the row matrix.
341-21/8/07	Eq. (8.28'), next to last term. space is needed after the $\sin^2$theta.
341-21/8/07	3rd line from bottom should read $L = T - U$ =...
342-21/8/07	second paragraph:*** Because of this linear term in U, the Hamiltonian is not $T + U$. However, it is still in this case the total energy, $T + V$ since the"potential "energy...****
349 - 22/6/06	4th line after last equation ***advantage. It is ...***
360 - 22/8/06	Eq. (7.32') ***$(ds)^2$ = ...***
361 - 22/8/06	2nd line -- ***...(cf. Eq. (7.32'))***
364 - 11/Apr/08	Exercise 16 Equation *** H = p^2/2a ...***
265 24/6/09	Eqn. in part)b) – no minus sign
366 - 22/8/06	3rd line from bottom ***...of the particles with ...***
	CHAPTER 9

373 29/8/06	line below Eq. (9.16) the P_i at the end of the line should have a "dot" over it.
276 29/9/06	Equation above (9.30) interchange the off disgonal elements Equation below (9.30) interchange the two off diagonal elements
377-9/4/09	Eq. (9.32a): The subscript on F should be 1.
378 - 22/8/06	footnote: 3rd line from bottom: the alpha should be a lower case omega.
380	Fig. 9-1(d) Label the vertical axis *** P *** capital letter
384 24/6/09	Near the middle of the page 3,3 element in Matrix **M** should be -1
389	last unnumbered display Eq. on page: replace the *u* in the first partial with *v*.
391	3rd line, 2nd display equation. The partial derivative in the numerator should be of second order.
391	line following Eq. (9.77):***...the derivative with respect to...***
391 - 22/6/06	6th line from bottom the *J* should be **J**
392	line following Eq. (9.77):***generally noncommutive...***
393	Eq. (9-81) there should be a "," between all the *p* and *q* subscripts.
395 - 22/8/06	Eq. (9.89) Second equation $F^1(q, Q)$
397	line above Eq. (9.96) ***Eq. (9.67) we have ***
397	line following Eq. (9.96) *** ...way of writing Eq. (8.39). ...***
401	replace the "," after *U(q,p)* with a "."
402	line following Eq. (9.106):***...equation of motion Eq. (9.94),...***
404	Eq. (9.114) ***(***r*** x ***p***)*** vectors
411 - -11 Apr-08	First eqation --- p should be bold & italic
415 - 22/8/06	Eq. (9.137) the A should be **A**
417 - 22/8/06	line below Eq. (9.147) *** By straightforward manipulation...***
422 - 21/8/07	in problem 7(b) *** *F3* type for the identity transformation*** and *** *F4* type for the exchange transformation***
423 -22/08/06 21/8/07	2nd line from top, 2nd equation $P_2 = -2q_1 - q_2$ First line of problem 12 ***for a canonical transformation are given***
425 24/6/09	equation should read qB/m in SI units or qM/mc in Gaussian units
426 - 11/Apr/08	Exercise 27a -- equation *** ... = (1/2)(xi)^T S (xi) ***
429 25/6/09	Exercise 41 – an example of the constant epslon could be a charge *q*
	CHAPTER 10
431	Eq. (10.3)first of the terms involving the partials of F_2 the q_i should be q_1
434 4/21/10	Last term in equation 10.14 should read *** (*alpha) t* ***
436	5th line above Eq. (10.30):***...Hamilton's principal function...***
438	2nd line from bottom-- replace *F* by *W*
439	second of Eqs. (10.41) -- replace 2 inside square root by 4
444	line above Eq. (10.49)***are separable. In this case a solution...***
444	Eq. (10.50) *** H_j(... ***

451 - 21/8/07	Eq. (10.74'), numerator of the 2nd term on the lhs. The subscropt should be phi 3rd line after equation (10.77) ***Equation (10.76) says the *z*-component of the ***
459 -22/8/06	5th line after Eq. (10.106) ***...variables imply that ...***
460 - 22/8/06	In Eq. (10.110') the second *a* in the right hand side should be *e*
461 - 22/8/06	2nd line above Eq. (10.115) ***separable variable pairs...***
463 - 22/8/06	Eq. (10.119) the limit is taken as *T* goes to the limit
464 - 22/8/06	3rd line after Eq. (10.121) ***...If only *m* of the *n****
465	After the Sum symbol ***$j_{ki}\ w_i$
467 - 22/8/06	3rd line from bottom replace "integral over" by "integral of theta"
478 25/6/09	Derivation #4: all the terms of the form J/Pi should have a square root on them.
478	3rd line of Exercise 5 ***...of the Hamiltonian-Jacobi equation for...***
480 25/6/09	Last line Exercise 16 should ;;;less than or equal to Pi/2
482 25/6/09	Delete the primes (') on all the *J*'s.
	CHAPTER 11
484	Insert Above 11.1**We have skipped the field of complexity which is the range of problems which are not chaotic, but are too complex for reliable predictions using the methods developed in the preceding and following chapters.
488 - 22/8/06	first of Eqs. (11.10) - the P_1 should be P_i
499 - 22/8/06	3rd line above Eq. (11.25): there should be a plus/minus sign in front of 0.408
505 - 22/8/06	6th line in Section 11.7 ***...set of 2*N* first-order...***
514 - 22/8/06	In Eqs. (11.39) through (11.41b), all subscipt n should be italic. Also in the 3th through 6th lines following Eq. (11.41b)
	CHAPTER 12
528	Eq. (12.5) --- replace the subscript "*i*" on the rhs by a subscript "*1*"
530	Eqs. (12.20) -- first equation, last term --omega is raised to the 4th power
531	Eqs. (12.21) -- first equation, last term --omega is raised to the 5th power
532	footnote -- delete 5th word.
533 - 22/8/06	End of second line -- there should b a dot over c_i to indicate derivative Also in the equation following the second set of brackets shloud be "[...]" not "{...}"
534	3rd equation on the page, 3rd term -- ***...)^4 ...***
537	extend bar over entire left hand side term
542	Eq. (12.64) 3rd term on rhs is epsilon^2
542	line below Eq. (12.66) -- replace *a* by lower case Greek alpha
543	Eqs, (12.71b) and (12.71c) -- the bold $\mathbf{v}_o$ should a bold (Greek**)** $\mathbf{nu}_o$
545 22/8/06	9th line above Eq. (12.80) ***the 19th century...***
546	Equation below (12.28b) replace *H* by *J*
	CHAPTER 13

562 26/6/09	right hand side of (13.14) replace *a* with greek alpha
563 - 22/8/06	last symbol on page should be an italic greek symbol mu.
567 - 30/11/06	Eq. (13.28) - lhs - 2nd term -- raise the greek nu
571 - 30/11/06	7th line ***-T_i with components -T_i^j ***
571 - 22/8/06	3rd line above Eq. (13.44) ***...vector, we expect...***
573 - 30/11/06	following Eq (13.54) to the end of the page - Pi index must be superscript and eta index must be subscript.
578 - 30/11/06	3rd line DELETE (and therefore H) and at the end of the line ***should be a scalar***
584 - 30/11/06	Eq. 13.101 - rhs -add a comma before the greek nu in the second term
594 - 22/8/06	Eq. (13.145) second term on the right hand side: the denominator should have the partial derivative symbol.
600 26/6/09	Last integral -- upper limit should be *x* not infinity.
	APPENDIX A
603 - 23/Mar/07& 9 Apr/09	Eq. (A.11xyz): Lower left matrix element, second term, replace sin <theta> with sin <phi> Also the (1,1) term should be -cos<theta> cos<phi>
	APPENDIX B
606	Middle display Eq. (B.1) *** $i^3 = -i$ ***
608	First line after Eq. B11: ***whose only solution is $l_1 = l_2 = 1$***
611	Renumber Table B.5 to B.4 and Table B.4 to B5. On line above what was originally B.5 add*** See table B.4*** 5th line below second table (was B.5 now B.4) ***In Table B.5 the ...***
	SUGGESTED BIBLIOGRAPHY
617	Reference to Hestenes should include 2nd Ed.
619	First reference on Chapter 11 -- author's name should read ***Hao Bai-Lin*** as per the edition referenced. Chinese name order also appears as Bailin Hao and Hao Bailin
	AUTHOR INDEX
624	Lorenz, E.N., 523 Lorentz, H. A. 577
632	Lagrange multipliers, 16, 46, 67
637	delete page 339 from reference "Symplectic,approach"

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If I have left on a name, please notify me. Page maintained by John Safko

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