PRINCIPLES OF SEISMOLOGY

CORRECTIONS (10-4-2008)

Page,	**Line,**	**Equation**	
xiii	5 fb		Add period (author.)
7	7, 8 fb		no italics: “At an introductory level there are books by”
11	4 fb		...change of this distance **per unit distance.**
19	1		adiabatic **isentropic process with reversible infinitesimal deformations,** there **....**
19	5		..isothermal processes **with reversible heat conduction,** we introduce....
36		3.39	$\sum_k \frac{\partial}{\partial x_k}\frac{\partial L}{\partial\left(\frac{\partial q_i}{\partial x_k}\right)}+\frac{\partial}{\partial t}\frac{\partial L}{\partial\left(\frac{\partial q_i}{\partial t}\right)}-\frac{\partial L}{\partial q_i}=0$
67	3 fb		from equations (**5.31**) and (**5.32**)
40	19		0.5%
70	Fig 5.4		(arrows in oposite sense)
74		5.55	rx_3
77	6 fb		separating the two media. **Notice that as in 5.2.3 W_{SH} is a complex quantity.**
79		5.87	$\mu(2\phi_{,13} - \psi_{,33} + \psi_{,11}) = ...$
		5.88	$\lambda(\phi_{,33} + \phi_{,11}) + 2\mu(\phi_{,33} + \psi_{,13}) = \lambda'(\phi'_{,33} + \phi'_{,11}) + 2\mu'(\phi'_{,33} + \psi'_{,13})$
		5.89	1st matrix, 4th element: $\lambda(1+r^2) + 2\mu$ 2^{nd} matrix, 3^{rd} element: $\mu(1+s^2)$ 3th matrix, 2^{nd} row: r -1 r' 1 3^{rd} row: $2r\mu$ $-\mu(1-s^2)$ $2\mu'r'$ $-\mu'(1-s'^2)$ 4^{th} row: $-\lambda(1+r^2)-2\mu$ $-2\mu s$ $\lambda'(1+r'^2)+2\mu'$ $2\mu's'$
82		5.97	$\tau_{33} = \lambda\phi_{,11} + (\lambda + 2\mu)\phi_{,33} + 2\mu\psi_{,13}$
82	5		**Using from Snell law the relation $1-s^2 = -(3r^2 + 1)$,** the coefficients ....
103	8		..is **twice** the difference..
104	fig 6.11		..the **reduction** velocity **is**..(twice)
119	5		..**travel** times
138	3 fb		delete “such”
157	4 fb		about **75 m**
184		10.7-10.9	change k for k^2
187	5		and e = **12°47’...**
197		10.65	$k(s'H + x_1 - ct)$
199		10.78-10.83	

$$2r'(A'e^{ikr'H} - B'e^{-ikr'H}) + (1 - s'^2)(C'e^{iks'H} + D'e^{-iks'H}) = 0 \quad (10.78)$$

$$[\lambda'(1 + r'^2) + 2\mu' r'^2)\left(A'e^{ikr'H} + B'e^{-ikr'H}\right) + 2\mu' s'\left(C'e^{iks'H} + D'e^{-iks'H}\right) = 0 \quad (10.79)$$

$A' + B' - s'C' + s'D' = A + sC$ (10.80)

$r'A' - r'B' + C' + D' = -rA + C$ (10.81)

$$\mu'\left[2r'(A'-B') + (1-s'^2)(C'+D')\right] = \mu\left[2rA + (1-s^2)C\right] \quad (10.82)$$

$$\left[\lambda'(1+r'^2) + 2\mu' r'^2\right](A'+B') + 2\mu' s'(C'-D') = \left[\lambda(1+r^2) + 2\mu r^2\right]A + 2\mu sC \quad (10.83)$$

200		(10.84)	$= -\mu(1+3r^2) = \mu(1-s^2)$
200	9		**If in the system of equations (10.78) to (10.83), we put $a' = kr'H$ and $b' = ks'H$,** the determinant of the**…**
200		(determinant)	1st row: $2r'e^{ia'}$ $-2r'e^{-ia'}$ $(1-s'^2)e^{ib'}$ $(1-s'^2)e^{-ib'}$ 0 0
			2nd row: $-(1-s'^2)e^{ia'}$ $-(1-s'^2)e^{-ia'}$ $2s'e^{ib'}$ $2s'e^{-ib'}$ 0 0
			4th row: r' $-r'$ 1 1 r -1
			5th row: $2\mu'r'$ $-2\mu'r'$ $\mu'(1-s'^2)$ $\mu'(1-s'^2)$ $-2\mu r$ $-\mu(1-s^2)$
203	16		..Rayleigh waves with **elliptical particle motion, prograde or retrograde depending on the relative properties of the two media, and generally** a vertical major axis. ....
204		10.108	$k_S = (\quad)^{1/2}$
204		10.109	$c_S = c_f\left(1 + \frac{9c_f}{4a^2\omega^2}\right)$
205	7		horizontal layers and **those problems are thereby..**
206	9 fb		the **(x,z)** plane ...
244	2		vector potential **ψ**
244	3		vector potential **ψ**
244		13.24	$\psi =$ ...
269	5		..becomes **much** more complicated.
287		15.17	$M_W = 2/3 \log M_0 - 6.1$
287	21		...seismic moment, **in Newton-meter,** that will be ....
288		15.19	$\log E_S = 2.4\, m_b - 1.2$
288		15.20	$\log E_S = 1.5\, M_S + 4.8$
288	6 fb		of 10^{17} J (10^{24} erg**)**
288	5 fb		of 10^{15} J...
292	3		...seismic moment M_0 **(Nm)** is....
292	4fb		...(1.5 MPa**). A numerical value for the two last terms in (15.35) is 9.5**.
292		15.35	$\log M_0 = 3/2\, M_S + 4.8 - \log(\eta\sigma/\mu)$
298	6		those for a single force. **For a single force acting at point ξ_i the displacements at point x_i are $u_i(x_i, \xi_i)$.** If ….
…			

298	12		**Where the comma indicates derivatives with respect to ξ_i which are then put to zero for a force at the origin.** For the force…….
299		16.18	$u_i^{TP} = \int_{-\infty}^{\infty} M(T_k T_l - P_k P_l) G_{ik},_l \, d\tau$
300		16.23	$u_n(x_s,t)$ =
303		16.30	$\nabla^2 u(r) = - 1/\alpha^2\rho \ \delta(r)$
304		16.37	..- $\alpha^2 \nabla^2 \phi$ = ..
		16.39	$\Phi = -\nabla \bullet W$
		16.40	$\Psi = \nabla \times W$
		16.41	$\nabla^2 W = -F$
		16.45	$\Phi = \frac{\delta(t)}{4\pi} \frac{\partial}{\partial \xi_1}\left(\frac{1}{r}\right)$
		16.46	$\Psi = -\frac{\delta(t)}{4\pi}\left[0, \frac{\partial}{\partial \xi_3}\left(\frac{1}{r}\right), -\frac{\partial}{\partial \xi_2}\left(\frac{1}{r}\right)\right]$
305		16.49	$\phi = \frac{1}{16\pi^2\alpha^2\rho}\int_V \frac{\delta(t - r/\alpha)}{r} \frac{\partial}{\partial \xi_1}\left(\frac{1}{r}\right) dV$
305	1 fb		$4\pi\alpha^2\tau^2/r$
305		16.50 + 1	$4\pi\alpha^2\tau^2/r$
307	9 fb		**Somigliana**
330		(17.32)	$M_{ij} = M_0 (T_i T_j – P_i P_j)$
339		18.9	.....dS
339	8		..tends to zero, **introducing μ from the factor in (18.1),** we obtain,
341		18.21	$\Delta u \ t/\tau$,
343	3fb		P: $\omega_1 = 1.2\alpha/L$
350		18.42	$u(\rho)$ =...
409		21.19	denominator : $[(\omega^2 - \omega_0^2)^2 + (2\omega\omega_0\beta)^2]^{1/2}$
427	4 fb		add: **In Cartesian coordinates, the Laplacian of a vector is a vector with components the Laplacians of each component**, $\nabla^2 F = (\nabla^2 F_1, \nabla^2 F_2, \nabla^2 F_3)$ A1.38 **For other coordinates systems the Laplacian of a vector can be derived from (A1.36) ,** $\nabla^2 F = \nabla(\nabla \cdot F) - \nabla \times \nabla \times F$ A1.39
447		Probl. 1.2	(matrix last row) 1 1 **2**
448		Probl. 1.9	Derive **from** the ...
454		Probl. 6.6	density ρ’
463	23fb		1867-79