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 \[
\sum_{k} \frac{\partial}{\partial x_{k}} \left( \frac{\partial L}{\partial q_{i}} \right) + \frac{\partial}{\partial t} \left( \frac{\partial L}{\partial q_{i}} \right) - \frac{\partial L}{\partial q_{i}} = 0
\]
67 3 fb from equations (5.31) and (5.32)
40 19 0.5%
70 Fig 5.4 (arrows in opposite sense)
74 5.55 \( \text{rx}_3 \)
77 6 fb separating the two media. Notice that as in 5.2.3 \( W_{SH} \) is a complex quantity.
79 5.87 \( \mu(2\phi_{13} - \psi_{33} + \psi_{11}) = ... \\
5.88 \lambda(\phi_{33} + \phi_{11}) + 2\mu(\phi_{33} + \psi_{11}) = \\
5.89 \lambda'(\phi'_{33} + \phi'_{11}) + 2\mu'(\phi'_{33} + \psi'_{11}) \)
1st matrix, 4th element: \( \lambda(1+r^2) + 2\mu \)
2nd matrix, 3rd element: \( \mu(1+s^2) \)
3rd matrix, 2nd row: \( r' -1 \)
3rd row: \( 2r\mu - \mu(1-s^2) \)
4th row: \( -\lambda(1+r^2) - 2\mu s \)
82 5.97 \( \tau_{33} = \lambda\phi_{11} + (\lambda + 2\mu)\phi_{33} + 2\mu\psi_{11} \)
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 \( \epsilon = 12^\circ47'... \\
197 10.65 k(s'H + x_1 - ct)
199 10.78-10.83

\[
2r'(A'e^{ikx'H} - B'e^{-ikr'H}) + (1 - s^2)(C'e^{ikx'H} + D'e^{-ikr'H}) = 0 \quad (10.78)
\]
\[
[\lambda'(1 + r'^2) + 2\mu'r'^2] \left( A'e^{ikx'H} + B'e^{-ikr'H} \right) + 2\mu's' \left( C'e^{ikx'H} + D'e^{-ikr'H} \right) = 0 \quad (10.79)
\]
\[
A' + B' - s'C' + s'D' = A + sC \quad (10.80)
\]
\[
r'A' - r'B' + C' + D' = -rA + C \quad (10.81)
\]
\[
\mu'\left[2r'(A'-B') + (1-s'^2)(C'+D')\right] = \mu\left[2rA + (1-s^2)C\right] \quad (10.82)
\]
\[
[A'(1+r'^2) + 2\mu'r'^2(A'+B')] + 2\mu's'(C'-D') = [A(1+r^2) + 2\mu r^2]A + 2\mu sC \quad (10.83)
\]
\[
200 = -\mu(1 + 3r^2) = \mu(1 - s^2) \quad (10.84)
\]

If in the system of equations (10.78) to (10.83), we put \(a' = kr'H\) and \(b' = ks'H\), the determinant of the...

\[
\begin{array}{cccc}
2r'e^{ia'} & -2r'e^{ia'} & (1-s'^2)e^{ib'} & (1-s'^2)e^{-ib'} \\
(1-s'^2)e^{ia'} & - (1-s'^2)e^{-ia'} & 2s'e^{ib'} & 2s'e^{-ib'} \\
r' & -r' & 1 & 1 & r & -1 \\
2\mu'r'e^{ia'} & -2\mu'r'e^{ia'} & \mu'(1-s'^2)e^{ib'} & \mu'(1-s'^2)e^{-ib'} & -2\mu & -\mu(1-s^2)
\end{array}
\]

Rayleigh waves with elliptical particle motion, prograde or retrograde depending on the relative properties of the two media, and generally a vertical major axis. ....

\[k_s = \left(\frac{9c_f}{4a^2\omega^2}\right)^{1/2} \quad (10.108)\]

\[c_s = c_f \left(1 + \frac{9c_f}{4a^2\omega^2}\right) \quad (10.109)\]

horizontal layers and those problems are thereby..

the \((x,z)\) plane ...

vector potential \(\psi\)

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..becomes much more complicated.

\[M_W = 2/3 \log M_0 - 6.1 \quad (15.17)\]

..seismic moment, in Newton-meter, that will be ....

\[\log E_S = 2.4 \text{ m}_s - 1.2 \quad (15.19)\]

\[\log E_S = 1.5 \text{ M}_s + 4.8 \quad (15.20)\]

of \(10^{17} \text{ J} (10^{24} \text{ erg})\)

of \(10^{15} \text{ J}...\)

..seismic moment \(M_0\) (Nm) is....

...(1.5 MPa). A numerical value for the two last terms in (15.35) is 9.5.

\[\log M_0 = 3/2 \text{ M}_s + 4.8 - \log(\eta\sigma/\mu) \quad (15.35)\]

those for a single force. For a single force acting at point \(\xi_i\) the displacements at point \(x_i\) are \(u_i(x_i, \xi_i)\). If ....
Where the comma indicates derivatives with respect to $\xi_i$ which are then put to zero for a force at the origin.

For the force…….

$$u_{i \text{TP}} = \int_{-\infty}^{\infty} M(T_i T_i - P_i P_i) G_{ik \text{TP}} \, d\tau$$

$$u_0(x_s,t) =$$

$$\nabla^2 u(r) = - \frac{1}{\alpha^2 \rho} \delta(r)$$

$$\Phi = - \nabla \cdot \mathbf{W}$$

$$\Psi = \nabla \times \mathbf{W}$$

$$\nabla^2 \mathbf{W} = - \mathbf{F}$$

$$\phi = \frac{1}{16\pi^2 \alpha^2 \rho \alpha} \int \phi(t - r / \alpha) \frac{\partial}{\partial \xi_1} \left( \frac{1}{r} \right) dV$$

$$\Delta u \tau, \quad \Delta u \tau, \quad \Delta u \tau$$

.. tends to zero, introducing $\mu$ from the factor in (18.1), we obtain,

$$\Delta u \tau, \quad \Delta u \tau, \quad \Delta u \tau$$

Somigliana

$$M_{ij} = M_0 (T_i T_j - P_i P_j)$$

.. tends to zero, introducing $\mu$ from the factor in (18.1), we obtain,