Geophys. J. Int. (2006) **165,** 382 doi: 10.1111/j.1365-246X.2006.02902.x

Corrigendum

Soler, T. & van Gelder, B. H. W., 1991. On covariances of eigenvalues and eigenvectors of second-rank symmetric tensors (*Geophys. J. Int.,* **105**, 537–546)

A recent paper by Bressan *et al.* (2003) has identified a discrepancy in the theory in Soler & van Gelder (1991). This identification has led us to reanalyse carefully our previous work. This time we counted on the opportune independent collaboration of Mr Jen-Yu Han, a Doctoral student of the second author. Mr Han discovered some further typos and potential errors of interpretation in the equations previously published by Soler & van Gelder (1991) that for rigorousness should be clarified. The revisions are as follows.

Owing to the symmetry of the second-rank stress tensor $[\varepsilon]$, there are multiple choices for the elements of the matrix $[D]$ in eq. (8). Although the published values of matrix $[D]$ are correct, they do not validate eq. (12). One way to amend this problem is to modify the values for the matrix $[D]$ in eq. (8) as:

$$[D]_{6\times 9} = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 \\ 0 & 0.5 & 0 & 0.5 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0.5 & 0 & 0 & 0 & 0.5 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0.5 & 0 & 0.5 & 0 \end{bmatrix}.$$

Given the above modified elements of $[D]$, the transpose symbol 't' in eqs (12) and (14) should be substituted by the pseudo inverse symbol '$+$'. Therefore these two equations become, respectively:

$$\upsilon_d[\varepsilon'] = [D]\mathrm{vec}[\varepsilon'] = [D][T]\mathrm{vec}[\varepsilon] = [D][T][D]^{+}\upsilon_d[\varepsilon]$$

and

$$[V] = [D][T][D]^{+}.$$

Since eq. (38) is defined to be associated with the vector of rotations of the eigenvalues $\{\Omega^p\}$, eq. (39) should be:

$$[F]_{6\times 6} = [D]_{6\times 9}[S^t \otimes S^t]_{9\times 9}[G]_{9\times 6}$$

and consequently, eq. (43) should also be revised as:

$$\{\beta\} = [F]^{-1}\{d\varepsilon\} = [\![[G]^{+}[S \otimes S][D]^{+}]\!]\{d\varepsilon\}.$$

REFERENCES

Bressan, G., Bragato, P.L. & Venturini, C., 2003. Stress and strain tensors based on focal mechanisms in the seismotectonic framework of the Friuli-Venezia Giulia region (Northeastern Italy), *Bull. seism. Soc. Am.,* **93**(3), 1280–1297.

Soler, T. & van Gelder, B.H.W., 1991. On covariances of eigenvalues and eigenvectors of second-rank symmetric tensors, *Geophys. J. Int.,* **105**, 537–546.