

**Page 93, equation (3.92)**

First, let us remind of the definition of divergence for a second-order tensor:

$$(\operatorname{div} \mathbf{A})^i = \sum_k \frac{\partial A^{ik}}{\partial x^k} \quad (1)$$

and a third-order tensor:

$$(\operatorname{div} \mathbf{B})^{ij} = \sum_k \frac{\partial B^{ijk}}{\partial x^k} \quad (2)$$

(note that the results is second-order tensor - divergence is a contraction operation).

Second, note that outer product of a vector ( $\mathbf{a}$ ) and a second-order tensor ( $\mathbf{A}$ ) is a third-order tensor with elements

$$(\mathbf{a} \wedge \mathbf{A})^{ijk} = a^i A^{jk} - a^j A^{ik}$$

and thus

$$[(\mathbf{x} - \mathbf{y}) \wedge \mathbf{T}]^{ijk} = (\mathbf{x} - \mathbf{y})^i T^{jk} - (\mathbf{x} - \mathbf{y})^j T^{ik} \quad (3)$$

Finally, taking into consideration (3) and (2) and employing (1):

$$\begin{aligned} \{\operatorname{div}[(\mathbf{x} - \mathbf{y}) \wedge \mathbf{T}]\}^{ij} &= \sum_k \frac{\partial}{\partial x^k} [(\mathbf{x} - \mathbf{y})^i T^{jk} - (\mathbf{x} - \mathbf{y})^j T^{ik}] \\ &= \sum_k \left[ T^{jk} \frac{\partial (\mathbf{x} - \mathbf{y})^i}{\partial x^k} + (\mathbf{x} - \mathbf{y})^i \frac{\partial T^{jk}}{\partial x^k} \right] \\ &\quad - \sum_k \left[ T^{ik} \frac{\partial (\mathbf{x} - \mathbf{y})^j}{\partial x^k} + (\mathbf{x} - \mathbf{y})^j \frac{\partial T^{ik}}{\partial x^k} \right] \\ &= T^{ji} + (\mathbf{x} - \mathbf{y})^i \sum_k \frac{\partial T^{jk}}{\partial x^k} - T^{ij} - (\mathbf{x} - \mathbf{y})^j \sum_k \frac{\partial T^{ik}}{\partial x^k} \\ &\equiv T^{ji} + (\mathbf{x} - \mathbf{y})^i (\operatorname{div} \mathbf{T})^j - T^{ij} - (\mathbf{x} - \mathbf{y})^j (\operatorname{div} \mathbf{T})^i \\ &= T^{ji} - T^{ij} + [(\mathbf{x} - \mathbf{y}) \wedge \operatorname{div} \mathbf{T}]^{ij} \end{aligned}$$

and changing the notation to general vector-tensor symbols, (3.92) follows.