

LETTER TO THE EDITOR

COMMENTS ON THE PUBLICATION "COMPATIBILITY CONDITIONS OF SMALL DEFORMATIONS AND STRESS FUNCTIONS"

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The paper "Compatibility Conditions of Small Deformations and Stress Functions" [*Prikl. Mekh. Tekh. Fiz.*, **38**, No. 5, 136–146 (1997)] contains inaccuracies which can lead to the conclusion that the satisfaction of six Saint-Venant compatibility conditions is not necessary for the existence of the displacement vector u_i . This is not the case. As is shown in the theory of elasticity, the Saint-Venant compatibility conditions $\varepsilon_{imp}\varepsilon_{jmq}\partial_{mn}\varepsilon_{pq} = 0$ are necessary and sufficient for the existence of a solution u_i of the overdetermined system $(\partial_i u_j + \partial_j u_i)/2 = \varepsilon_{ij}$ for specified strains ε_{ij} . Equations of (26)–(30), $B'\varepsilon = 0$, $B'A^{-1}\sigma = 0$, and $B'A^{-1}B\varphi = 0$ are incorrect. The matrix B' in these equations should be replaced by the operator Q -matrix which enters the Saint-Venant conditions. As a result, we obtain the compatibility conditions $Q\varepsilon = 0$, the equations in stresses $C\sigma = 0$ and $QA^{-1}\sigma = 0$, and the equations for the stress functions $QA^{-1}B\varphi = 0$. One should read ∂_{113} in place of ∂_{133} in the upper left-hand corner of the matrix B in solution 14 (see p. 143).

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