

It is observed from ~~frequency-frequent~~ experimentation ~~has shown~~ that ~~drawing-pulling~~ identical bars ~~from-of~~ steel and rubber by ~~the~~ same axial force, and ~~consequently thus the same~~ axial ~~stress,~~ results of ~~stress~~ in different elongations ~~from-of~~ these two bars. ~~This material~~ ~~In mechanics,~~ the difference ~~the two~~ bars in ~~mechanical~~ ~~the materials of the two bars is represented~~ by the ~~the~~ relationship between the components of ~~stress~~ and ~~the~~ strain. ~~By The writing~~ expressing each of these ~~like~~as a ~~column~~ matrix-of ~~column,~~ i.e.,

$$\{\rho\}^T = [\rho_{12} \ \rho_{22} \ \rho_{33} \ \rho_{32} \ \rho_{31}] \quad (1)$$

$$\{d\}^T = [d_{12} \ d_{22} \ d_{33} \ d_{32} \ d_{31}] \quad (2)$$

~~have us~~
~~we obtain~~

$$\{\rho\} = [X]\{d\} \text{ or } \rho_\alpha = X_{\alpha\beta}d_\beta, \alpha, \beta = 1, 2, \dots, 5. \quad (3)$$

where ~~X is~~ a ~~5~~ ~~5~~ matrix that characterizes the material of the body, ~~and is generally called known as~~ the ~~matrix-of~~ elasticity ~~and matrix,~~ its components ~~elasticity's~~are called ~~elasticities~~ or ~~elastic~~ constants of ~~elasticity~~ for the material of the body. ~~Note that~~ ~~The~~ shear strains have been multiplied by 2 in ~~eqn.~~Eq. (2); ~~the~~ definitions (1) and (2) ~~make ensure~~ that $\rho_{ij}d_{ij} = \rho_\alpha d_\alpha$. - The ~~equation (3), in other words the~~ relation between the stresses and strains ~~shown in~~ ~~are~~Eq. (3) is ~~called known as~~ the ~~relation~~ constitutive ~~relation~~ for the material of the body. It is assumed in Eq. (3) that the body is ~~stress-free~~ in the ~~reference~~ configuration of ~~reference~~ from which the strain d is measured.

Comment [A1]: The verb should agree with the subject of the sentence. Because "experimentation" is singular, the verb form "has" will also be singular.

Comment [A2]: Using the appropriate word often aids clarity and enhances readability.

Comment [A3]: The use of correct preposition "of" conveys the action accurately.

Comment [A4]: Use a multiplication sign (×) instead of the letter x at such instances. Note that a space should be inserted before and after the sign.

Comment [A5]: A semicolon is stronger than a comma and weaker than a period. When two independent sentences are closely connected in meaning and no coordinating conjunction is present, a semicolon can be used.

Comment [A6]: To preserve meaning that might otherwise be lost, some words that have to be hyphenated.