GENERAL
INTRODUCTION
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A body is called elastic if it returns to its original shape upon the removal of applied forces. All bodies exhibit elastic behavior under sufficiently small loads. The mathematical analysis of elastic behavior of a solid body is called the theory of elasticity.

The first name to be linked with the history of the theory of elasticity is Galileo [1564-1642]. The theory of elasticity embraces a wide field of phenomena. It contains the theory of heat conduction and the theory of stresses and strains due to the flow of heat, when coupling of temperature and strain fields occurs. The elasticity makes it possible to determine the stresses produced by the temperature field. Moreover, to calculate the distribution of temperature due to the action of internal forces which vary with the time.

The elasticity may be defined as the property of returning back to the original shape and size for some bodies after removing the forces causing deformation, deals with the study of the behavior of deformable bodies. It is often assumed in this theory that the body is homogeneous, perfectly elastic. Worth mentioning, theory of elasticity is the fundamental reference for all researchers in different areas of analytic engineering, because it consists of all items of modern structural engineering, also we derive from it all rules of strain and deformation, and by the use of it we describe most of the dynamic phenomena, core of solid mechanics, various areas, such as engineering structural mechanics, materials science, geophysics and others. A problem in the theory elasticity is completely solved, when the displacement has been found in all points in the plane.

We have to illustrate that the linear elasticity or (the first order elasticity) is the ability of a material to not be deformed under the effect of certain forces. But the nonlinear elasticity or (second order elasticity) is the ability of a material to be deformed under the effect of certain forces.