

ABSTRACT

The “plate with a hole” problem is one of the fundamental learning steps in any study of finite element analysis as it illustrates a number of key points fundamental to correct application. A plate with a hole is one of the basic steps involved in the study of finite element analysis (FEA). The computations performed in this work analyse the significance of existence of cut out in the rectangular plate in terms of its characteristics. These calculations are carried out by using finite element method (FEM) based solver ANSYS. It is known that elements of structures, during the exploitation, are exposed to different types of loads. During certain time intervals load may be static. In this, we will examine the 2D distribution of tensile stress on an object i.e. plate with a hole. The aim is to compare symmetric model of plate with a hole to complete model of plate with a hole using 2D analysis. In this, a rectangular plate possessing thickness is fixed on one of its side and tensional force is applied to the plate. First, we model the entire problem using plane stress element and later exploit symmetry and make another model that requires 1/4th of plate to be modelled.

Keywords: plate with a hole, FEM, FEA, Symmetry, ANSYS