ANSYS - Plate With a Hole Optimization

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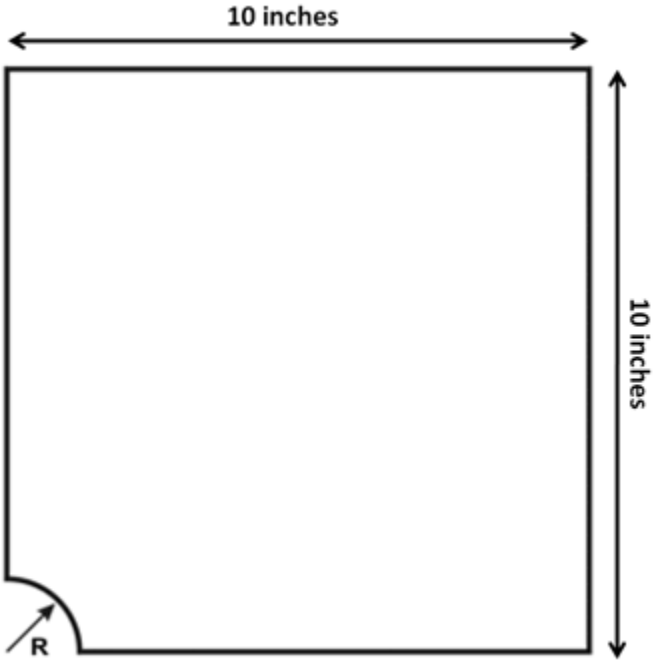
Plate with a Hole: Optimization

This module focuses only on the optimization process. You can learn how to create the model itself by going through the Plate with a Hole module on our free online simulations course at edX.org (sign up here).

Created in ANSYS 14.5

Problem Specification

Consider a square plate with a hole in its center. The plate is made out of "Cornellium", which has a Young's Modulus of 30E3 ksi and a Poisson's Ratio of 0.3 . The length and width of the plate are both 10 inches. The hole in the middle of the plate is subject to a uniform pressure of 18.5 ksi in the outward radial direction. Due to the symmetry of this problem only one quarter of the geometry is needed as shown below.



The radius of the hole is the design variable. Furthermore, the radius is constrained between a minimum value of 1.0 inch and a maximum value of 2.5 inches.

Using ANSYS, minimize the volume of the plate by optimizing its radius, while staying underneath a maximum Von Mises stress value of 32.5 ksi.

Go to Step 1: Pre-Analysis & Start-Up

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