

ANSYS - Large Telescope Truss

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Problem Specification

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Advanced FEA for Large Telescope Truss

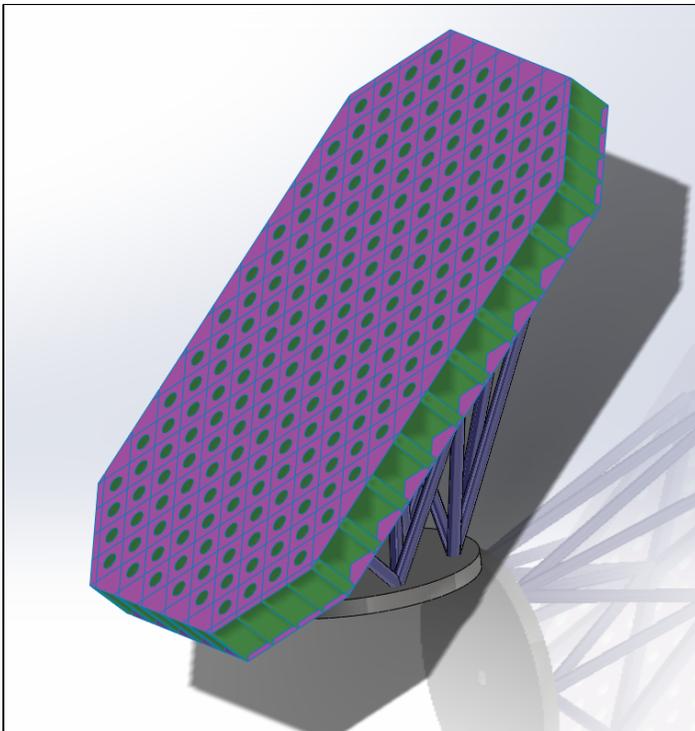
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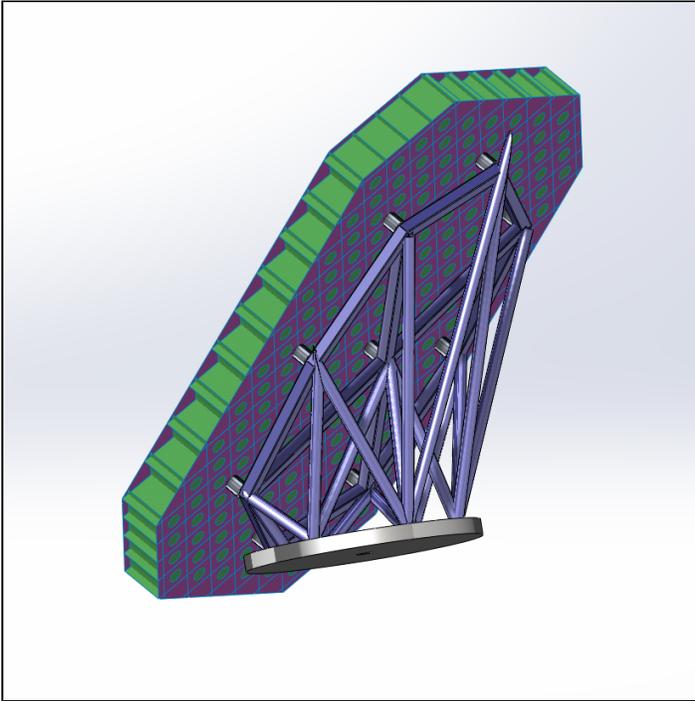
Problem Specification

This tutorial is aimed at showing how FEA software is used in "real-life" applications. The provided geometry and problem statement are results of research by Jeff Zolkower, and has only been altered slightly to make the tutorial.

A Tertiary Truss is being made for a deep-space telescope. This particular piece of equipment will reflect gathered light into detection sensors. Both weight and deformation are very key design aspects for this: the truss needs to be able to move the attached mirrors easily, and any deformation of the mirrors will cause unwanted distortion in the images.

Therefore, the design is focused on stiff, but lightweight structures, leading to a "honeycomb" and spar design.





This Telescope Truss will contain mirrors on the frame, (not modeled), and can be rotated with the Telescope, meaning that its orientation with respect to gravity is variable.

Learning Goals

The aims and goals of this tutorial is to present a realistic geometry and process which industry would go through to create an FEA simulation for use in their products. Due to the nature of this real-life application, we focus on the geometry and setup of the simulation. The majority of this tutorial focuses on the Geometry step, and to a lesser extend the Physics Setup step. The solution is not nearly as important as the process.

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