

OPTI 421/521 – Introductory Opto-Mechanical Engineering**Homework 13: Mirror mount****1) Mounting for a glass mirror**

For the case of a mirror made of Zerodur, 10" diameter, and 1" thick:

Write a summary for the support of this mirror:

- a) How much does this mirror weigh?
- b) For the case where the mirror is on its back (optical axis vertical), determine the optimal location for three support points on the back and calculate the self-weight induced figure errors.
- c) Create a Solid Works and use finite element modeling to determine this self-weight deflection. Read the surface deflections out and post-process the data to get:
 - RMS surface variation
 - RMS variation of the slope
 - Zernike fit to the data
- d) Describe how you could improve performance using a six-point attachment to the back of the mirror.
- e) For the case where the mirror is on edge (optical axis horizontal) determine the optimal location for two radial support points and calculate the self-weight induced figure errors.
- f) Use finite element modeling in Solid Works to evaluate the horizon support.

Extra credit:

- g) Investigate the effect of radial support misalignment. Shift the radial supports from the neutral plane and determine the shape error. Plot rms shape error as a function of this displacement.

2) Final Exam

Provide one question that you think would provide a good question for the final exam for this class.

3) Rules of Thumb

Provide three rules of thumb.