

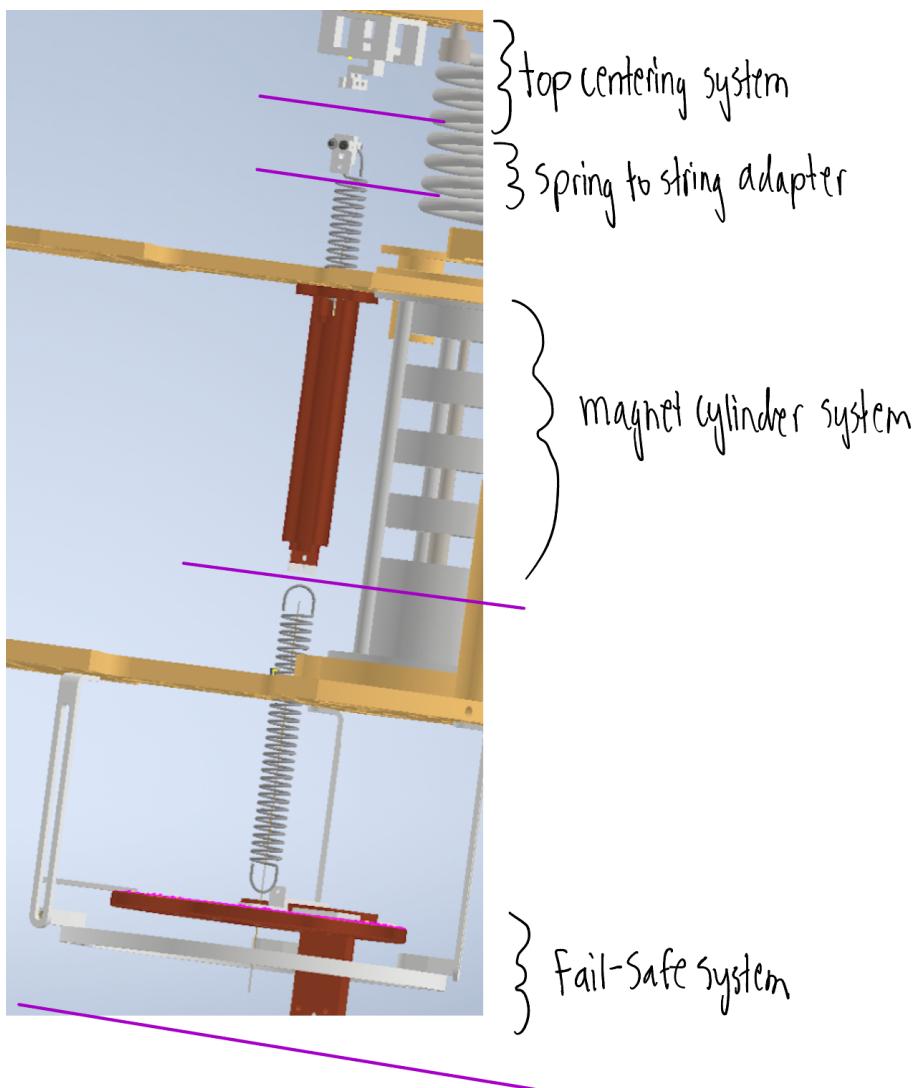
Vibration Isolation System Explanation

Dmitri Demler

Note: some minor details have been changed since the creation of this document

Goal:

In our experiment we use a cryo fridge which cools our experiment cold temperatures relatively quickly but vibrates sporadically and this results in inaccurate results. Due to this, we want to make a vibration isolation system that can stop these vibrations from reaching the main experiment. To accomplish this, we use a pendulum system consisting of two springs in series with a long thin magnet in between them. A picture of the system is shown below with the appropriate labels. On the following pages I will explain each other system and the parts (and filenames) that associate with them.

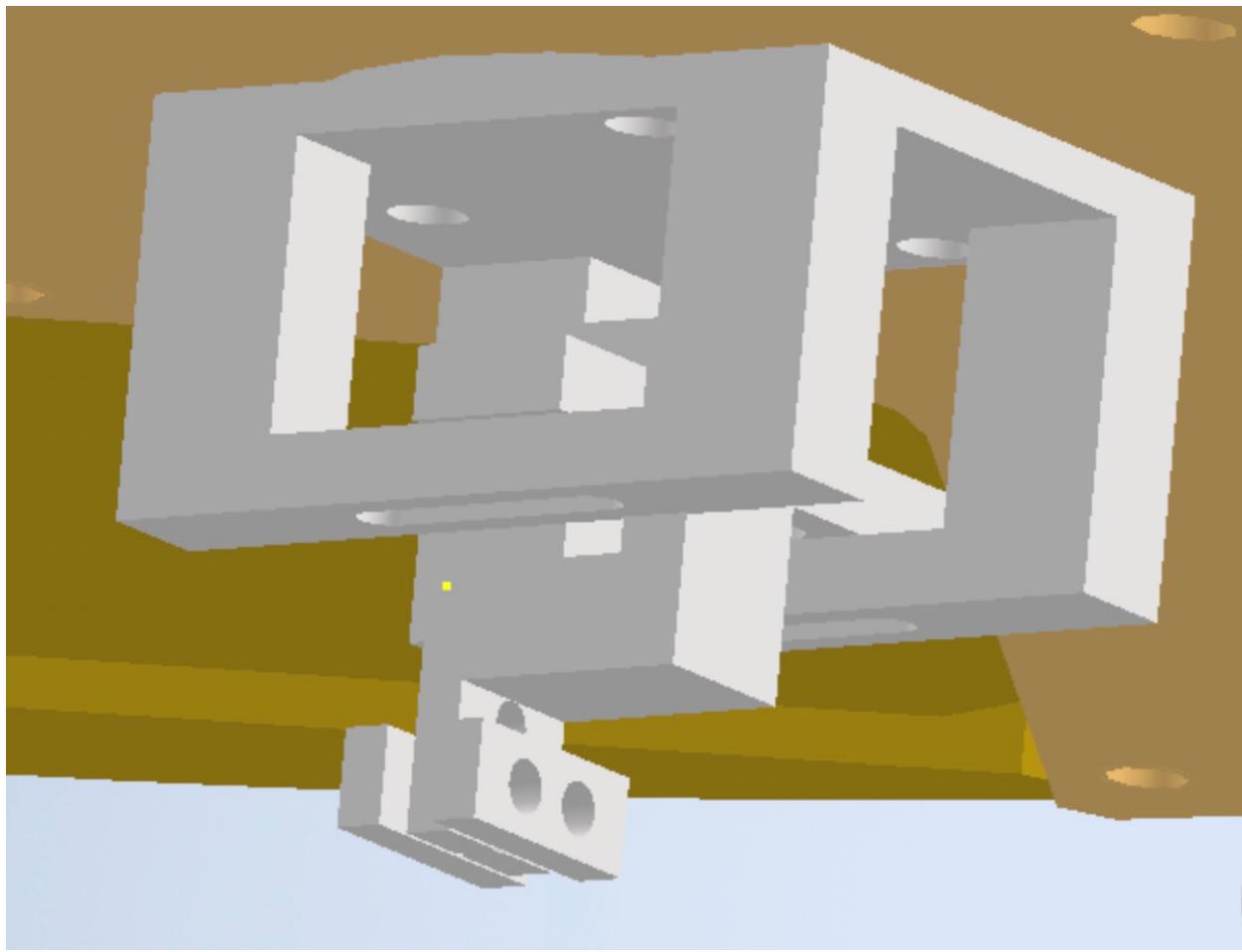


Top Centering System:

Goal: allow for the ability to center the system to go into the hole while mounted.

Files: CentrTop_Middle, CentrTop_Try5, topholdingblock4, topboltholder6

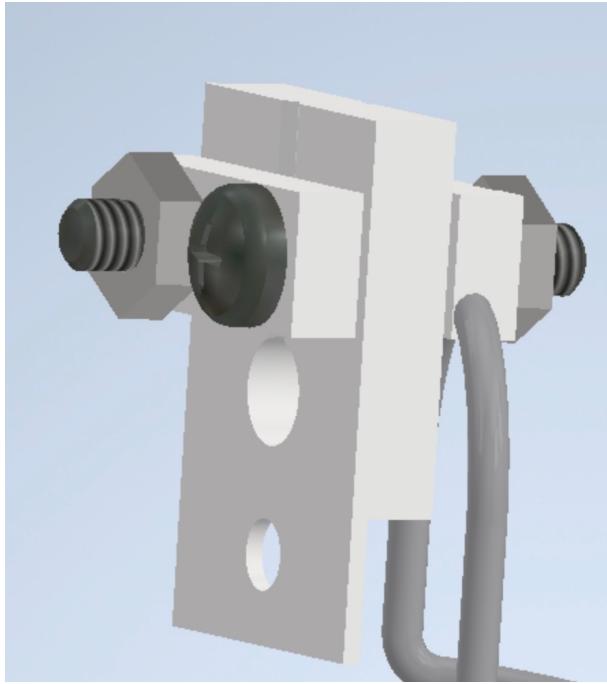
The trickiest part of this is the CentrTop_try5 and topboltholder6 files.

**Spring to String adapter:**

Goal: make an adapter that can hold a string and spring together.

Files: SpringToStringHolder2, SpringToStringholdingblock

This part is pretty simple but it requies pretty small holes (M2).

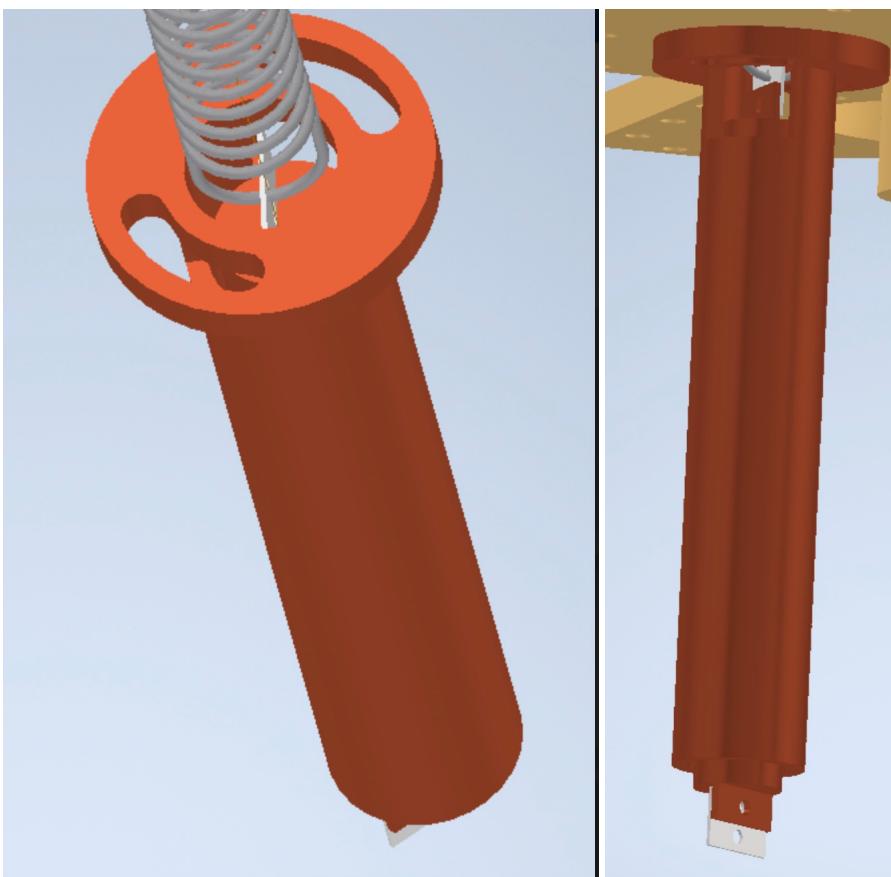


Magnet Cylinder System:

Goal: Make an eddy current dampener using a magnet on the pendulum surrounded by a copper cylinder that is connected to the fridge itself.

Files: ConductiveCylinde6, Springboltholder_thinshet_cyl1, Springholder_topcyl1,

This I think will be the hardest to produce because of the long and thin cylinder system. It is 2mm thick and has a top segment meant to attach to the top stage. The magnet will go in between this cylinder and is meant to not touch it. Let me know if you can build this, unfortunately the cylinder cannot have a different inner diameter can be made thicker (ie larger outer diam).
Images below.



The magnet and then just the long-threaded rod with the
spring holders.

Fail Safe System:

Goal: revamp the previous safety mechanism for this system

Files: FS_springHoleAdapter2_1, Ring1_1, Stickoutbolt

This is pretty simple (I think) but it includes circular sliders on the ring.

