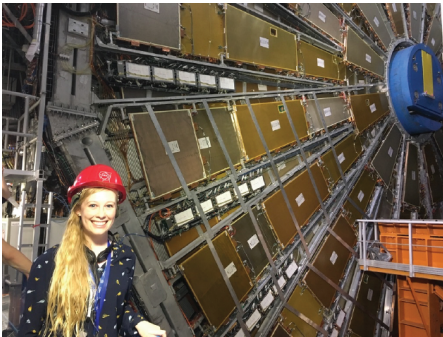


Design Process for the Disco-Tracker

Few people get to see the ATLAS detector - even fewer get to see the inner tracker

ATLAS sits in Switzerland, 100m underground making it hard to get to. Anyone can visit, but you can only visit it when the LHC is turned off. With this project I wanted a way for anyone to be able to visualize what goes on inside a tracking detector.



Me visiting ATLAS in 2019

Construction Process

I started with the innermost tube, so that any initial mistakes would be less visible. I made the frame by gluing and clamping poplar rods to bamboo hoops. I glued the mirrors on one-by-one with E6000 glue. Finally I threaded EL wire through the gaps in the mirrors to simulate the tracks.

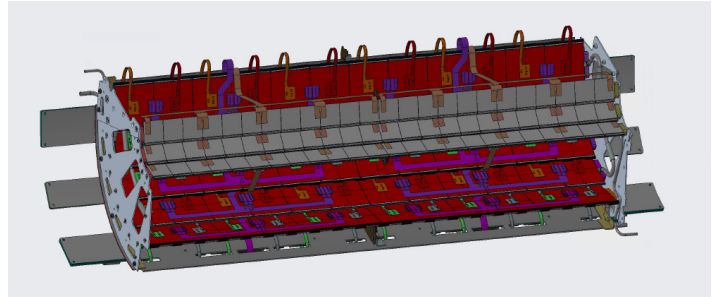


Supplies:

- 822 2"x2" mirrors
- 8", 12" and 16" hoops
- 68 1/4" poplar rods
- Clamps and wood glue
- 6 tubes of E6000 glue
- EL wire

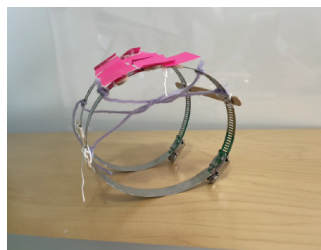
Generating ideas

I spoke with mechanical engineers who work on building the detector to come up with ideas and get the dimensions and geometry (very approximately) right.

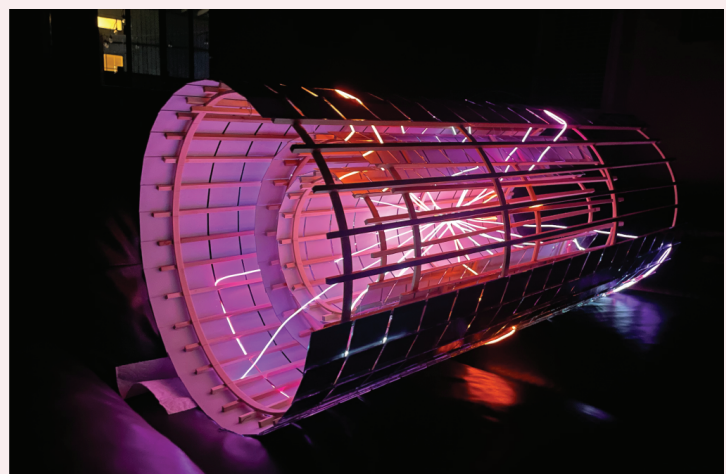


An actual CAD model of the inner system layers (courtesy of Todd Claybaugh)

Prototyping My first prototypes allowed me to test out the mechanically assembly and iterate on the design.



The End Result:



The next step will be to find a permanent home for this project, perhaps on the SLAC site.

