Sphericon Robot Design Changes

Half Circle Rails:

* Add through slots & holes for strings along the rails
  + Need to be sized according to width of screw
  + Slots will accommodate different material, such as paracord
    - Need to experiment with washers
* Extend the ends beyond just the half circle.
  + Allows the motor assembly to oscillate the full half circle.
  + Need to make sure that the size of of the assembly still fits inside the laser cutter
* Extend the diameter of the sphereicon
  + This should solve the issue of the strings hitting the motor assembly
  + Keep inner diameter the same
* Use one piece acrylic construction
  + Will prevent the motor from sticking to the ledge caused by the break
* Look into ways to increase traction
  + One group used a rubber paint/coating

Motor Assembly

* Add end stops that detect the maximum and minimum
  + Will help drastically with startup and oscillations
  + Need to change code
* Look into alternate gears to prevent motor slipping / change torque
  + This isn’t a high priority
* Fabricate dust cover for circuit

Control Circuit

* Finish Othermill board design phase
  + Testing is required for these boards
    - Probably lots of potential improvements, like adding through holes for mounting
* Make other borads for different controllers?
  + Do we want to stick with Nano 33 BLE if we aren’t using BLE

Code

* Finish BLE investigation
  + Is it really not possible?
* Find alternatives to sync motors together
  + Avoid wired interface, maybe external chip is needed
* Once end stops are implemented, change code
* Add more in depth control variables
  + RPM/Oscillations per Minute
  + Oscillation offset

System Changes

* Flat Packing system
  + Motor + Controller that change the tension elements
  + Sense tension and adjust correspondingly
    - Use this to control pathing?
* Adding other sensors
  + Used to verify simulations and makes the robot “useful”
  + Gyroscope
  + Accelerometer
  + Camera
  + Scientific measurement tools
* Material changes
  + We are already planning to swap to thicker acrylic
  + Maybe use a metal inner section?
  + Use paracord for tension elements
    - Do we want to try elastic?