



CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

Name(s) Paulina Xu	Project Number J1034
Project Title A New Way of Travel	
<p style="text-align: center;">Abstract</p> <p>Objectives This experiment does testing on Elon Musk's hyperloop using a smaller representation with copper wire, a battery, and magnets. It tests to see what allows the battery to move the fastest by changing the diameter of the wire the battery is traveling through and the air pressure.</p> <p>Methods Copper wire, batteries, 2ft tube, and a flat surface used to create a track for the battery to travel through. Electric wire, Raspberry Pi, breadboard, SD card, Python, display, Infrared Emitter, and an Infrared Receiver used to create a program to calculate time taken by the battery. Vacuum, electric wire, Raspberry Pi, Python, and an air pressure sensor used to calculate the air pressure.</p> <p>Results The wire was wrapped with different diameters. As the diameter got larger, the battery took longer to travel through the tube based on a concept called magnetic flux. With the vacuum on and constantly taking out air, the battery was able to move faster due to reduced air pressure.</p> <p>Conclusions Since a larger diameter causes the battery to move slower, for the actual hyperloop, a tube correctly sized for the pod that will be traveling through it should be used. Reducing the air pressure helped the battery to move faster through the tube.</p>	
Summary Statement I tested on Elon Musk's hyperloop and found that a reduced air pressure and a correctly sized/smaller tube will allow the vehicle to move faster.	
Help Received I tested and created the setup myself. My father helped me with the Raspberry Pi. My science teacher helped me review my experiment.	