# Problem Analysis

In motorsports, having an effective setup package is critical to being competitive. With limited track testing time, racing teams must start developing their setup packages at their research facilities. One method of analyzing suspension parameters is using a shaker rig, which is a group of mechanical platforms that oscillate the vehicle to simulate road conditions.

According to some articles focused on miscellaneous use shaker rigs, having the rigs vibrate as precise and accurately as desired can pose a challenge. There are various types of components available to use as source of oscillations, but each has a potential problem.

From reading multiple sources, it is apparent that most shaker rigs are designed with 4, 7 or 8 posts (connections to the vehicle). The straight forward difference is that with less posts, a more simple and inexpensive vehicle test can be carried out. Using a higher number of posts allows more parameters to be simulated and tested. However, a more sophisticated test is more complex and expensive.

Shaker rig papers that have a motorsports typically discuss the modeling of the testing parameters rather than the shaker rig itself. This makes sense being that there are limited shaker rig facilities around the world and developing one’s own apparatus would be extremely costly. Perhaps something is the simulation constraints aligns with a mechanical component of shaker rigs that could be improved.