

# Physics Team Design Project:

## PH132 – Project Description

### Modeling the Motion of an Electric Train



Develop a theoretical model to describe the motion of an electric train as it is powered by a variable voltage source. Design an experimental procedure to test the validity of the model. In particular, your model should account for both a *mechanical description* of the motor, gear, and wheel assembly and an *electrical description* of the circuit. The final model must describe the conversion of electrical energy into mechanical energy while accounting for frictional losses.

During the final week of the project all groups will participate in the *Challenge Sessions*. During this competition each group will use their model to predict the performance of their train in a variety of different scenarios.

