Executive Summary

The parameters and characteristics of linear velocity transducer (LVT) and linear variable differential transformer (LVDT) were tested and identified in this lab. LVT and LVDT measure velocity and position, respectively. The LVDT was an E500 series from Measurement Specialties. The setup in part 1 had the LVT’s core shaft connected to a mass of 74.9 g that was raised and dropped under gravitational acceleration, which then impacted a foam underneath the apparatus which it initially bounced off and then entered a damped second order response before coming to rest.

From the results of LVT experiments, it was discovered that the LVT’s output (velocity) had a linear slope (acceleration) during the first 3 cycles, suggesting the mass went through free fall 3 times before it remained on the foam. The first three zero crossings of the velocity profile signifies when the mass reached the lowest point in its path (inside the foam, maximum potential energy, zero kinetic energy), when the mass reached the damped starting height (without energy loss this would be the same height that the mass was released from), and when the mass reached the lowest point in its path again (which was higher than the first time due to loss of energy).

Jesse’s Conclusion: