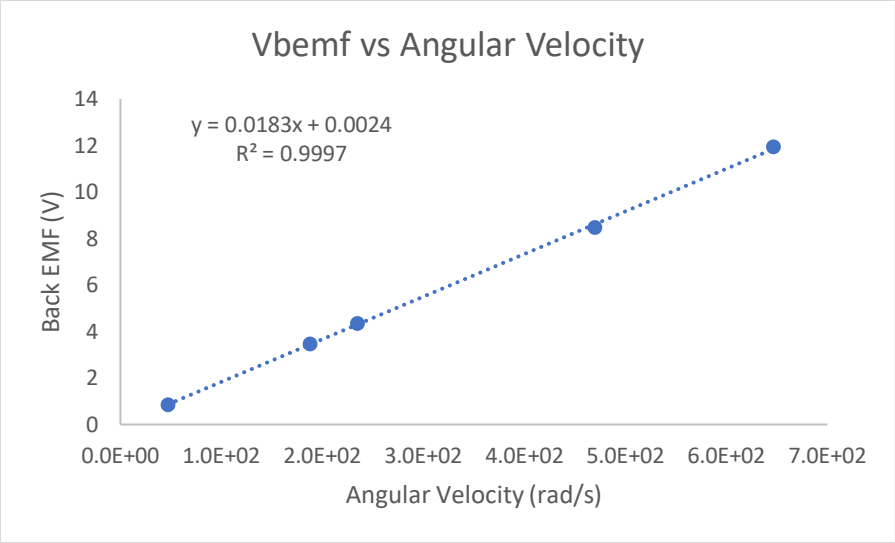
Mech. to Elect. Interaction:

$$V_{bemf} = k_{bemf}\omega$$

This is the formula for the back-emf voltage; we can use this formula to find the kbemf by plotting Vbemf versus the angular frequency (which was derived by using 1/12th the frequency of the encoder).



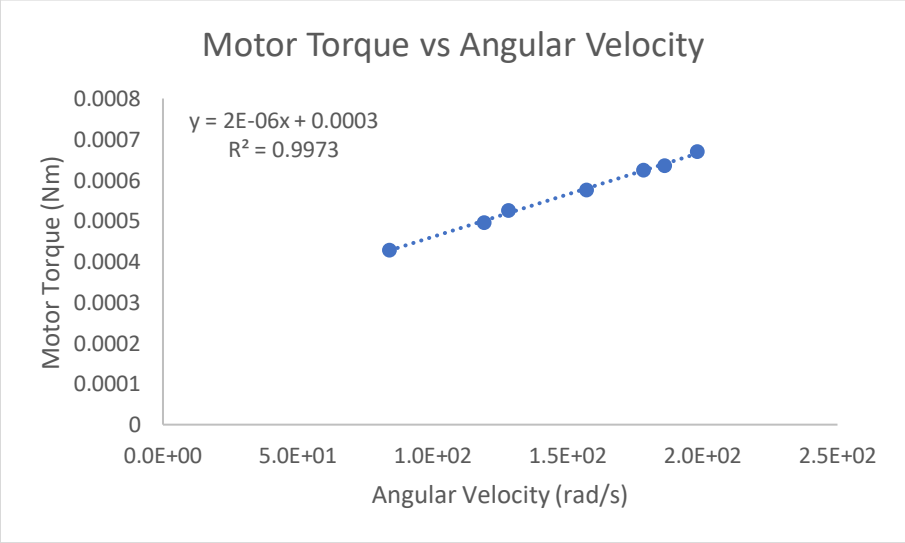
The slope for this graph corresponds to the kbemf value, which was derived to be 0.0183 V/(rad/s). This equates to the kT value in consistent units.

$$kT = 0.0183\ V/(rad/s)$$

Elect. to Mech. Interaction:

$$T_m = k_T i_m$$

This is the formula for the motor torque; we can use this formula to find kT by plotting Tm versus the motor current.



kD=	2.00E-06	Nm/(rad/s)
kC=	0.0003	Nm

These graphs match those derived in the class/lab. The slope of this graph is kD and the y-intercept is kC. Assuming the load torque is zero in this instance and the system is in steady-state conditions , the motor torque is equal to the frictional torque since $T_m - T_L - T_f = J\dot{\omega}$ becomes $T_m = T_f$.