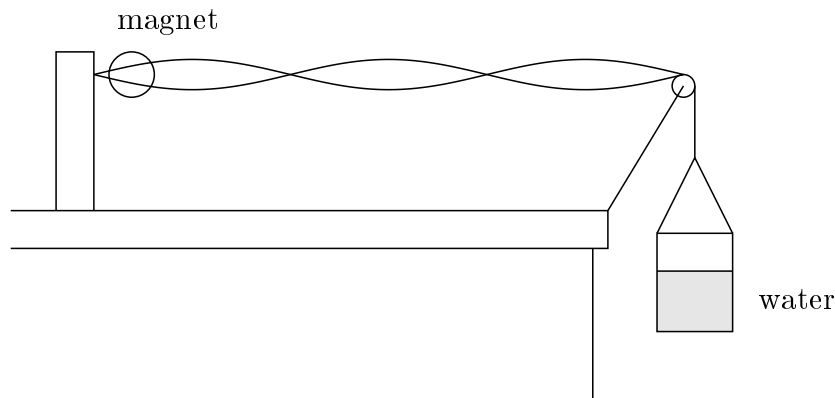


In this lab, you will produce standing waves in a wire. This is done by placing the wire through the poles of a magnet and passing an alternating current (60 Hz) through the wire. The resulting force of the magnetic field on the current drives the wire into a vertical oscillation at 60 Hz. The tension in the wire is equal to the weight hanging at the end. At certain tensions, the wire will resonate and produce visible standing waves.



Produce a standing wave by adjusting the amount of water in the container and thus changing the tension in the wire. (Don't add any additional weight beside water. You may break the wire.) Using a meter stick, measure the wavelength λ of the standing wave. Calculate the velocity v of the waves in the wire. Weigh the container of water to obtain its mass m . Calculate the tension F in the wire. From F and v , calculate the linear mass density μ of the wire. Repeat this for a different standing wave.

	1st Standing Wave	2nd Standing Wave
$\lambda =$	_____	_____
$v =$	_____	_____
$m =$	_____	_____
$F =$	_____	_____
$\mu =$	_____	_____