Experiment 11: Faraday's Law of Induction

Introduction

In 1831, Michael Faraday showed that a changing magnetic eld can induce an emf in a circuit. Consider

always in a direction that opposes the change of ux that created it. That is, the induced current tends to keep the original magnetic ux from changing by creating a magnetic eld in a direction that opposes the change in ux. As shown in Figure 1b, when the north end of the bar magnet is moved toward the loop, a current is induced. This induced current creates a magnetic eld that counteracts the increasing ux of the bar magnet. Thus, the direction of induced current is such that its own (created) magnetic eld

Induction Wand Set-up Procedure:

1. Attach the induction wand to the rotary motion sensor. The motion sensor should already be clamped and connected to the computer interface.
2. Use the Hall Sensor Probe to measure the magnetic field between the plates. This is your constant value of B. Calculate the area A, given that the inner diameter of the wire coil is 1.9 cm and the outer diameter is 3.1 cm.