

Slip Sliding Away

Objective: The purpose of this lab is to analyze the static friction force on a wooden block through the phenomena of equilibrium.

Procedure: Take the incline plane and set it on the table. Measure the board from the fulcrum to where you are going to set the block. Next, place the wood block on the incline and slowly raise the incline. At the point where the block starts to slip, measure the height of the block from the table. Repeat at least 30 times. Using the height, find the angle at which the block started to slip.

Place a mass atop the block, tape if need be. (Keep the tape off the bottom of the block.) Record the new height that the incline makes with the horizontal when the block starts to move. Repeat at least 30 times.

Graph the normal force vs. the static friction force. To find the static friction force and the normal force, you will need to apply the equilibrium equations to the situation and solve for the forces needed. (To do this, you will first need to calculate the average angle of the board when the block started to slip.) Once this is done, find the slope of the graph and calculate the coefficient of static friction.