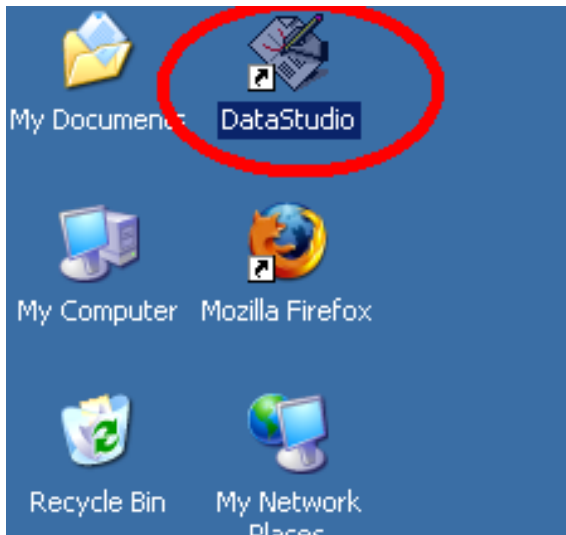


# DataStudio configuration for rotational collision

## Physics 23

Missouri University of Science and Technology

# DataStudio icon on desktop



# Create Experiment

DataStudio

File Edit Experiment Window Help


Summary Setup Start STOP 00:00.0 Calculate

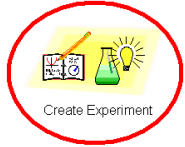
Data


Displays

Welcome to DataStudio

How would you like to use DataStudio?

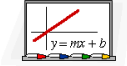
 Open Activity

 Create Experiment



X	Y
1	2.3
2	2.7
3	5.9

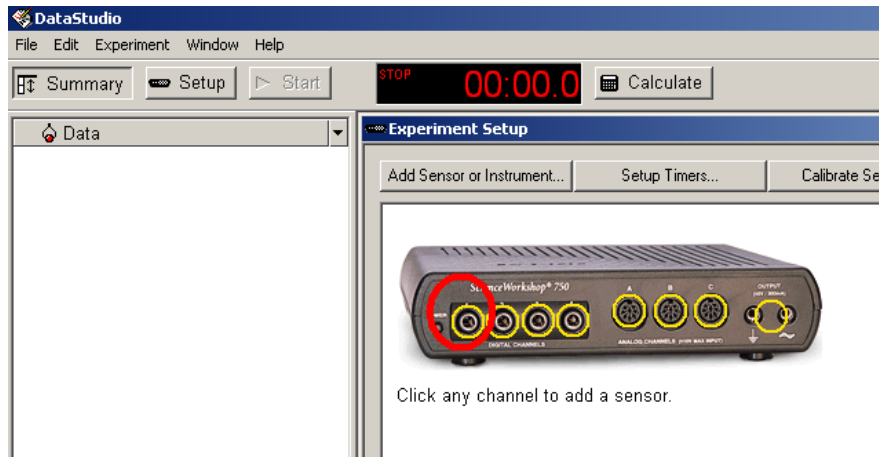
Enter Data


$$y = mx + b$$

Graph Equation

Show each time this program starts.

# Left-click input 1



The screenshot shows the DataStudio software interface. At the top, there is a menu bar with "File", "Edit", "Experiment", "Window", and "Help". Below the menu bar, there are buttons for "Summary", "Setup", and "Start". A digital display shows "STOP" and "00:00.0", and a "Calculate" button is to the right. The main window is titled "Experiment Setup" and contains buttons for "Add Sensor or Instrument...", "Setup Timers...", and "Calibrate Se...". Below these buttons is an image of a ScienceWorkshop 750 interface. The interface has several channels: "DIGITAL CHANNELS" (1, 2, 3, 4) and "ANALOG CHANNELS" (A, B, C). The first digital channel is circled in red. To the right of the analog channels is an "OUTPUT" section with a "0" button and a ground symbol. Below the image, the text reads: "Click any channel to add a sensor."

# Add Rotational Dynamics > OK


The screenshot shows the 'Experiment Setup' window for a ScienceWorkshop 750 interface. At the top, there are four buttons: 'Add Sensor or Instrument...', 'Setup Timers...', 'Calibrate Sensors...', and 'Sampling Options...'. Below these buttons is an image of the ScienceWorkshop 750 hardware unit, which has three digital channels labeled A, B, and C. A dialog box titled 'Choose sensor or instrument...' is open, displaying a list of available sensors. The 'Rotational Dynamics Apparatus' option is circled in red. The list includes:

- Drop Counter
- Flow Rate Sensor
- Four-To-One Adapter
- Free Fall Adapter
- Geiger Counter
- Laser Switch
- Motion Sensor
- Photogate
- Photogate & Picket Fence
- Photogate and Pendulum
- Rotary Motion Sensor
- Rotational Dynamics Apparatus**
- Smart Pulley
- Time Of Flight Accessory

At the bottom of the dialog box are 'OK' and 'Cancel' buttons.

# Check Angular Velocity only

Add Sensor or Instrument...    Setup Timers...    Calibrate Sensors...




The image shows a ScienceWorkshop 750 interface. At the top, there are three buttons: "Add Sensor or Instrument...", "Setup Timers...", and "Calibrate Sensors...". Below these is a photograph of the ScienceWorkshop 750 device, which has four digital channels (1-4), three analog channels (A, B, C), and two output ports. A small icon of a rotating disk is shown below the device. The main panel is titled "Rotational Dynamics Apparatus" and has two tabs: "Measurements" and "Constants". Under "Measurements", there is a table with columns for "Visibility, Name" and "Unit of Measure".

Visibility, Name	Unit of Measure
<input type="checkbox"/> Counter, Ch1	Counts/Sample
<input type="checkbox"/> Angular Position, Ch 1	deg
<input checked="" type="checkbox"/> Angular Velocity, Ch 1	deg/s
<input type="checkbox"/> Angular Acceleration, Ch 1	deg/s/s

# Increase Sample Rate to 20Hz

**Experiment Setup**

Add Sensor or Instrument... Setup Timers... Calibrate Sensors... Sampling Options...



Science Workshop® 750

DIGITAL CHANNELS 1 2 3 4

ANALOG CHANNELS A B C

OUTPUT (OUT / SIGNAL)

Rotational Dynamics Apparatus

Measurements Constants

Visibility	Name	Unit of Measure
<input type="checkbox"/>	Counter, Ch1	Counts/Sample
<input type="checkbox"/>	Angular Position, Ch 1	deg
<input checked="" type="checkbox"/>	Angular Velocity, Ch 1	deg/s
<input type="checkbox"/>	Angular Acceleration, Ch 1	deg/s/s

Sample Rate: 20 Hz

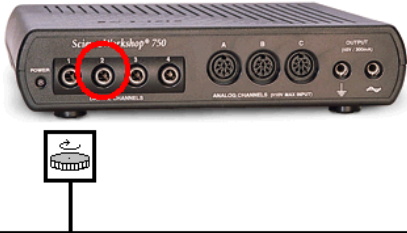
Sensor Sampling Options

- Reduce sample rate by average Effective Sample Rate
- Zero sensor automatically

# Left click Channel 2

**Experiment Setup**

Add Sensor or Instrument...   Setup Timers...   Calibrate Sensors...   Sampling Options...



Rotational Dynamics Apparatus

Measurements   Constants

Visibility, Name	Unit of Measure
<input type="checkbox"/> Counter, Ch1	Counts/sample
<input type="checkbox"/> Angular Position, Ch 1	deg
<input checked="" type="checkbox"/> Angular Velocity, Ch 1	deg/s
<input type="checkbox"/> Angular Acceleration, Ch 1	deg/s/s

Sample Rate: 10 Hz

Sensor Sampling Options

Reduce sample rate by average Effective Sample Rate



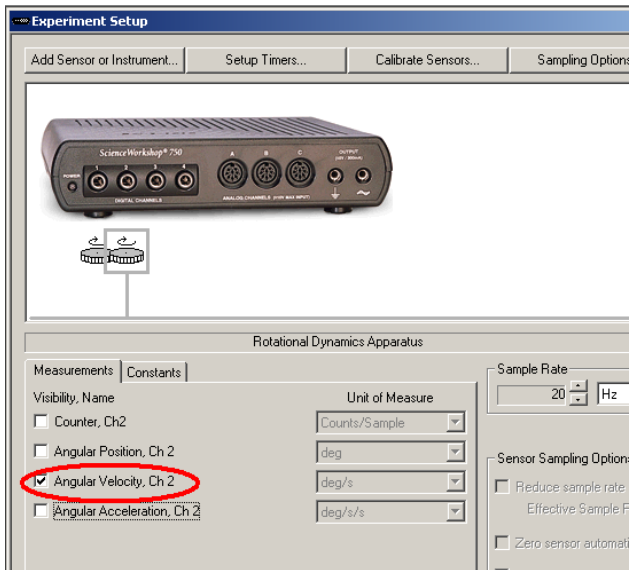
# Add Rotational Dynamics

The screenshot shows the 'Experiment Setup' window for a ScienceWorkshop 750 interface. At the top, there are buttons for 'Add Sensor or Instrument...', 'Setup Timers...', 'Calibrate Sensors...', and 'Sampling Opt...'. Below these is an image of the ScienceWorkshop 750 hardware unit with a rotary motion sensor icon connected to it. A dialog box titled 'Choose sensor or instrument...' is open, displaying a list of 'ScienceWorkshop Digital Sensors'. The list includes: Drop Counter, Flow Rate Sensor, Four-To-One Adapter, Free Fall Adapter, Geiger Counter, Laser Switch, Motion Sensor, Photogate, Photogate & Picket Fence, Photogate and Pendulum, Rotary Motion Sensor, **Rotational Dynamics Apparatus** (circled in red), Smart Pulley, and Time Of Flight Accessory. At the bottom of the dialog box, the 'OK' button is circled in red, and the 'Cancel' button is visible to its right. On the left side of the main window, there are sections for 'Measurements' (with 'Constan...' selected) and 'Visibility, Name' with checkboxes for 'Counter, Ch1', 'Angular Position, Ch', 'Angular Velocity, Ch' (checked), and 'Angular Acceleration'.

# Check Angular velocity

Experiment Setup

Add Sensor or Instrument... Setup Timers... Calibrate Sensors... Sampling Options



The image shows the ScienceWorkshop 750 interface. At the top, there are four buttons: "Add Sensor or Instrument...", "Setup Timers...", "Calibrate Sensors...", and "Sampling Options". Below these is a photograph of the ScienceWorkshop 750 device, which has four digital channels (A, B, C, D) and three analog channels (A, B, C). Below the device is a diagram of a rotational dynamics apparatus consisting of two stacked pulleys on a common shaft. The interface is titled "Rotational Dynamics Apparatus" and has two tabs: "Measurements" and "Constants". Under "Measurements", there is a table with columns for "Visibility, Name" and "Unit of Measure". The table contains four rows: "Counter, Ch2" (unchecked), "Angular Position, Ch 2" (unchecked), "Angular Velocity, Ch 2" (checked and circled in red), and "Angular Acceleration, Ch 2" (unchecked). To the right of the table, there is a "Sample Rate" section with a value of 20 Hz and a "Sensor Sampling Options" section with two unchecked checkboxes: "Reduce sample rate" and "Zero sensor automati".

ScienceWorkshop® 750

Rotational Dynamics Apparatus

Measurements | Constants

Visibility, Name	Unit of Measure
<input type="checkbox"/> Counter, Ch2	Counts/sample
<input type="checkbox"/> Angular Position, Ch 2	deg
<input checked="" type="checkbox"/> Angular Velocity, Ch 2	deg/s
<input type="checkbox"/> Angular Acceleration, Ch 2	deg/s/s

Sample Rate: 20 Hz

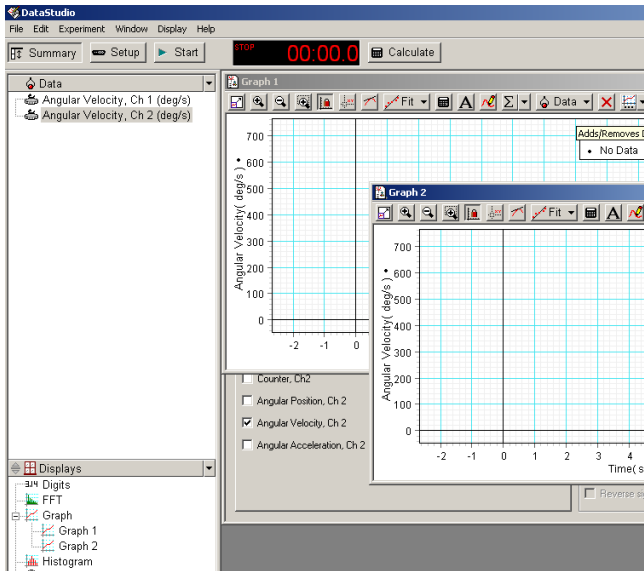
Sensor Sampling Options:

- Reduce sample rate
- Zero sensor automati

# Drag Graph to both channels

The screenshot displays a software interface for an experiment setup. On the left, a 'Data' panel lists two channels: 'Angular Velocity, Ch 1 (deg/s)' and 'Angular Velocity, Ch 2 (deg/s)'. Below this is a 'Display' panel with icons for 'Digits', 'FFT', 'Graph', and 'Histogram'. A red arrow originates from the 'Graph' icon and points to the 'Angular Velocity, Ch 1' entry. A second red arrow originates from the 'Graph' icon and points to the 'Angular Velocity, Ch 2' entry. On the right, the 'Experiment Setup' window shows a 'ScienceWorkshop® 750' interface card with a rotational motion sensor icon below it. The 'Rotational Dynam' section contains a 'Measurements' tab with a list of variables: 'Counter, Ch2', 'Angular Position, Ch 2', 'Angular Velocity, Ch 2' (checked), and 'Angular Acceleration, Ch 2'. Each variable has a corresponding unit field (e.g., 'deg/s').

# This creates one graph per channel



# Determine which channel corresponds to which graph

