

Analysis of Fountain

In this lab, you will analyze a photo taken of a fountain to determine the shape the water takes while flowing. This shape can be compared to the shape of the path taken by a solid object such as a basketball.

The same steps can be used to analyze any photograph whether the subject is moving like the water or stationary like a bridge. All you need is a photo in a format that QuickTime can read and Logger *Pro* 3.x.



Procedure

Open Logger *Pro*. Under **Insert**, choose Picture > Picture with Photo Analysis. Navigate to the photo on your computer and select it.

Back in Logger *Pro*, select the photo by clicking on it then drag the corner to re-size it to a convenient size for your work. Under **Page**, choose Auto Arrange to line up the windows.

Click on the New Point icon, the second icon on the right of the photo, to begin marking points on your photo. Move the cursor to the place where the water flow begins (for example) and click on that spot. The X and Y positions will be recorded in the data table and a dot will be left on the photo. Continue marking spots on the photo until you have defined the shape nicely.

The values in your data table are pixels on the photo. These need to be translated into position measurements. Choose an object in the photo that you know the size or length. [In the photo above, the dark feature was estimated to be 40 cm across.] Click on the Set Scale icon, the fourth icon down on the right of the photo, and drag a line from one side to the other on the object you chose. In the window that appears, tell Logger Pro how long your line is. Your X and Y values will now be in the units you have selected.

Where is the origin? Click on the Origin icon, the third icon down on the right of the photo, and move the cursor to the place in your photo you wish to use for the origin. The default is the lower left-hand corner. In the photo below, 12 data points have been marked, the green line indicates where the scale was set, and the origin is shown.



Now you are ready to proceed with analysis using the tools built into *Logger Pro*. Best wishes!

Extension

In the fountain diagram, a quadratic curve fit was successfully applied. One interesting thing to try is moving the origin around. What is the effect of moving the origin say from the bottom of the water flow to the point where it leaves the figure? How does this change the analysis? Try placing the origin at some point other than along the water flow. How does this change the analysis?

