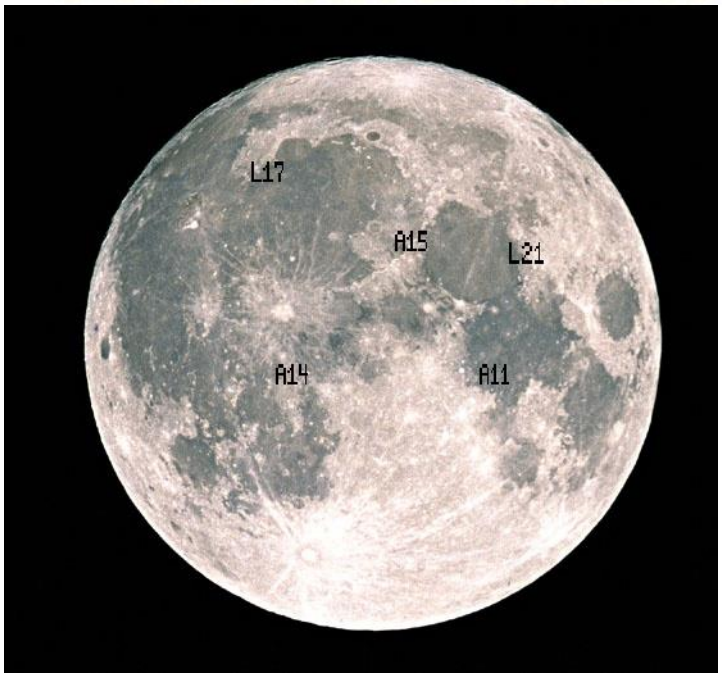
DID WE REALLY GO TO THE Moon?



We are going to the moon! …..?

John F. Kennedy set the goal of landing man on the moon in a speech entitled “Urgent National Needs” which was delivered to congress on May 25, 1961. The memorable lines from that speech were:

"I believe this Nation should commitment itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to earth. No single space project in this period will be more impressive to mankind or more important for the long-range exploration of space; and none will be so difficult or expensive to accomplish."-JFK

Why?

JFK answered this when he stated:

“We choose to go to the moon. We choose to go to the moon in this decade and do the other things, not because they are easy, but because they are hard.”-JFK

It was a very ambitious goal considering that we had only succeeded in sending unmanned spacecraft to nearby planets and had **only managed one manned orbital flight**. Could we have advanced so fast as to have succeeded in landing men on the moon by July 20, 1969?
There are those that to do not underestimate the American Spirit and show pride in our accomplishments.

Some say it was an elaborate HOAX pulled off to distract the world from the war in Vietnam and the Cold war. These people believe that the moon landing and related events were filmed at a remote studio to fool the people of the world.

Who is right?

"Where Physical Laws hold there is Reality!"
-Mr. B.

Step 1: Explore the Controversy. Use the following links to explore both sides of the issue.
Are Apollo Moon Photos Fake?

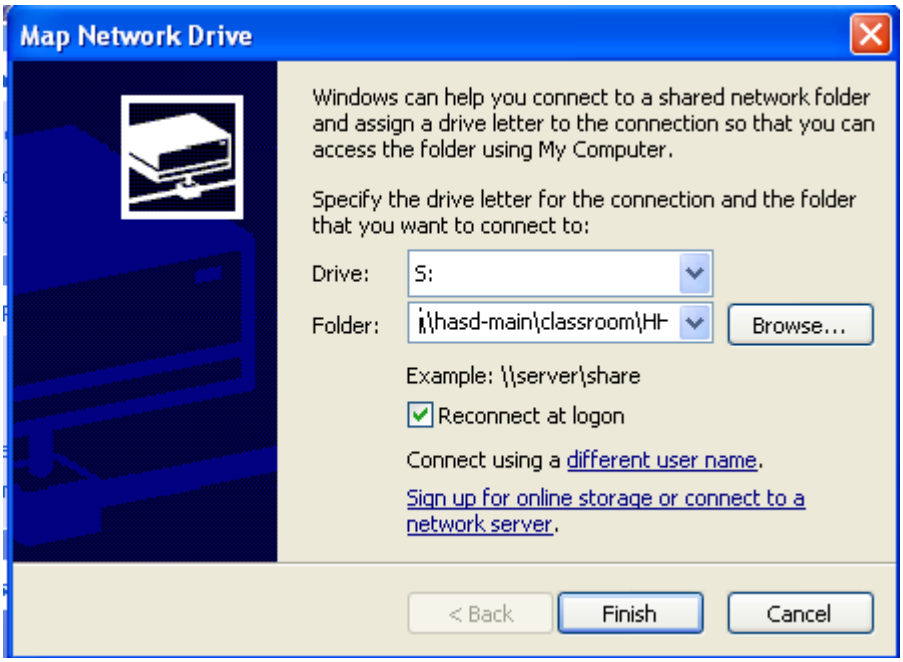
Was The Apollo Moon Landing Fake?

Step 2: Write a small journal entry to describe your views on this issue based on what you read.

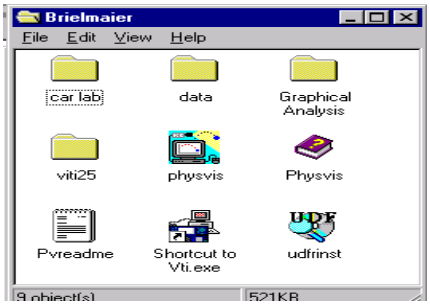
Step 3: Video Analysis

Video Analysis using Logger Pro 3 by Mr. Brielmaier

1. Click on My Computer →Tools→Map Network
   Map \\hasd-main\Classroom\HHS\Brielmaier\Brielmaier\Physics to be your S: Drive.

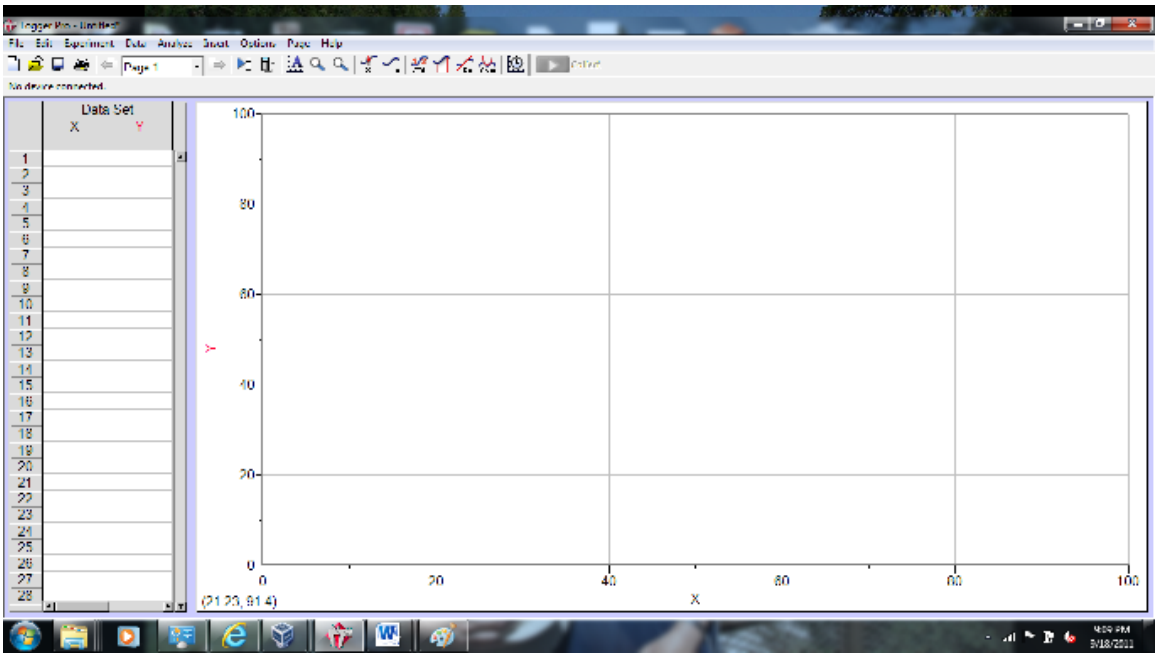


2. That should bring up a window that looks similar to this:

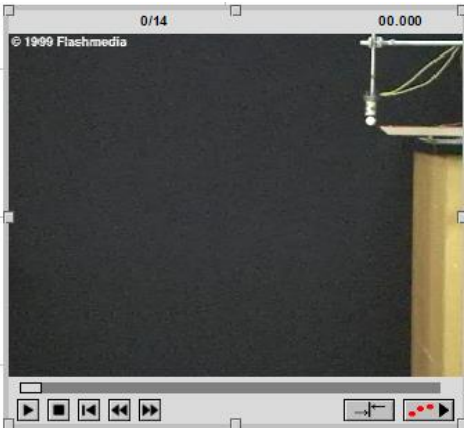


3. Click on the Shortcut to Logger Pro 3

4. That should bring up the following box. Click on Insert→Movie→Select Movie to be analyzed.



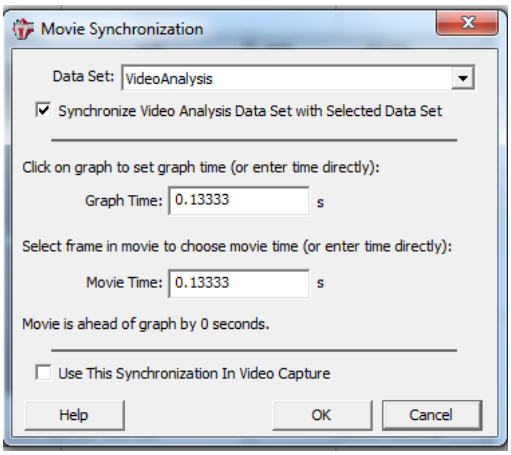
5. When the follow box appears play your video until you get to the first frame you want to analyze. This is usually the first frame before the object of interest begins to move.



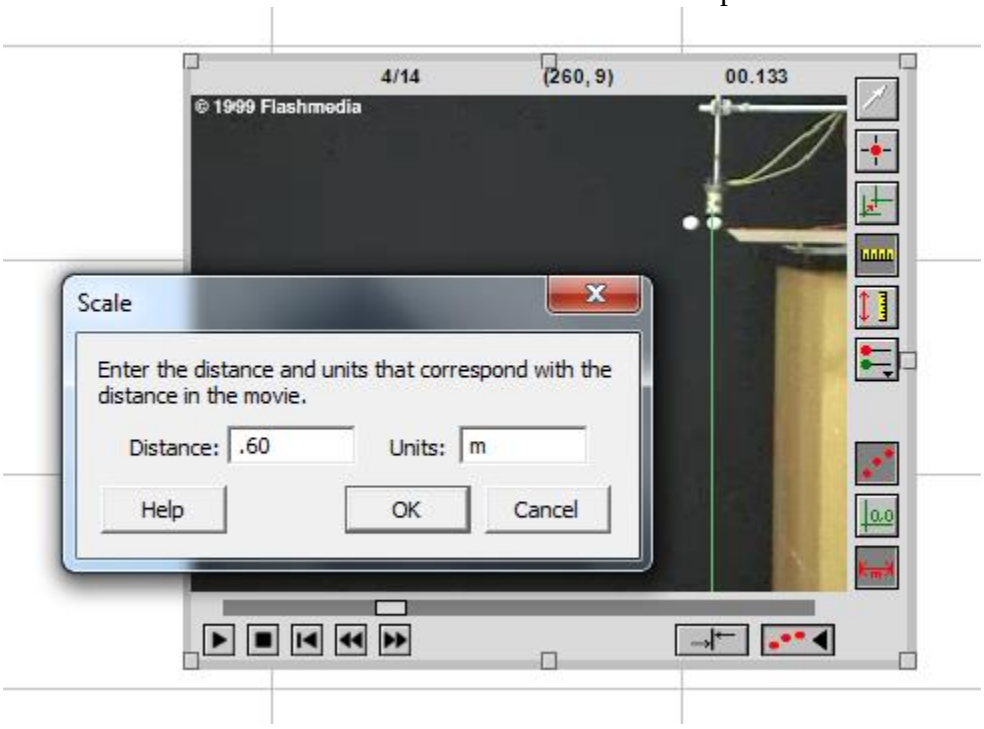
6. Then click the enable/disable Video Analysis Button 

7. Then Select the synchronize button 

8. When this box appears set Graph Time to 0.00 s. Then hit OK.

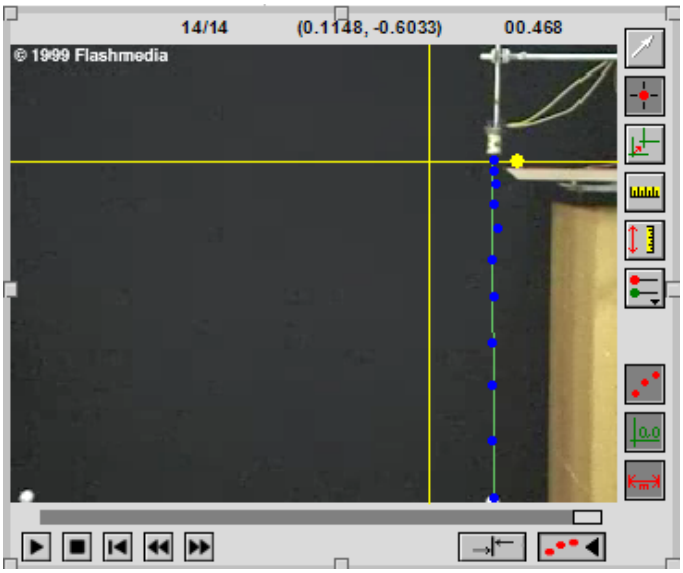


9. Click on the Set Scale Button  . Using your mouse Click on the top of the reference point then hold down on the left mouse button to draw in the line that represents the known distance and record that value in the box provided.

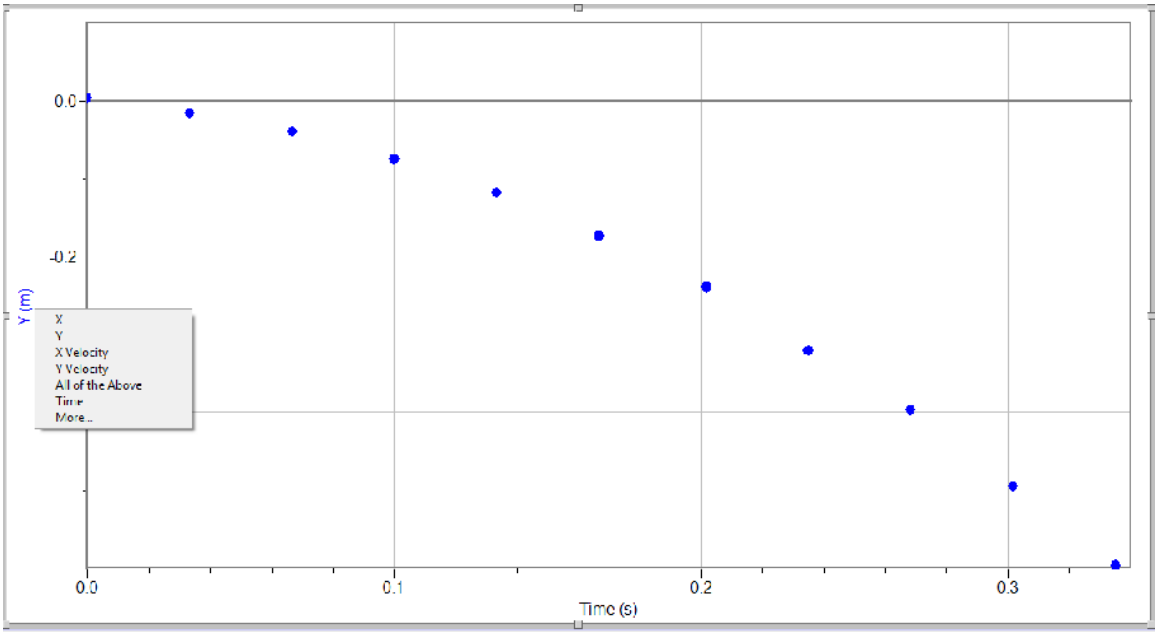


10. Set the origin using the origin by clicking on the Set Origin Button  then click on the spot in the movie that represents your origin.

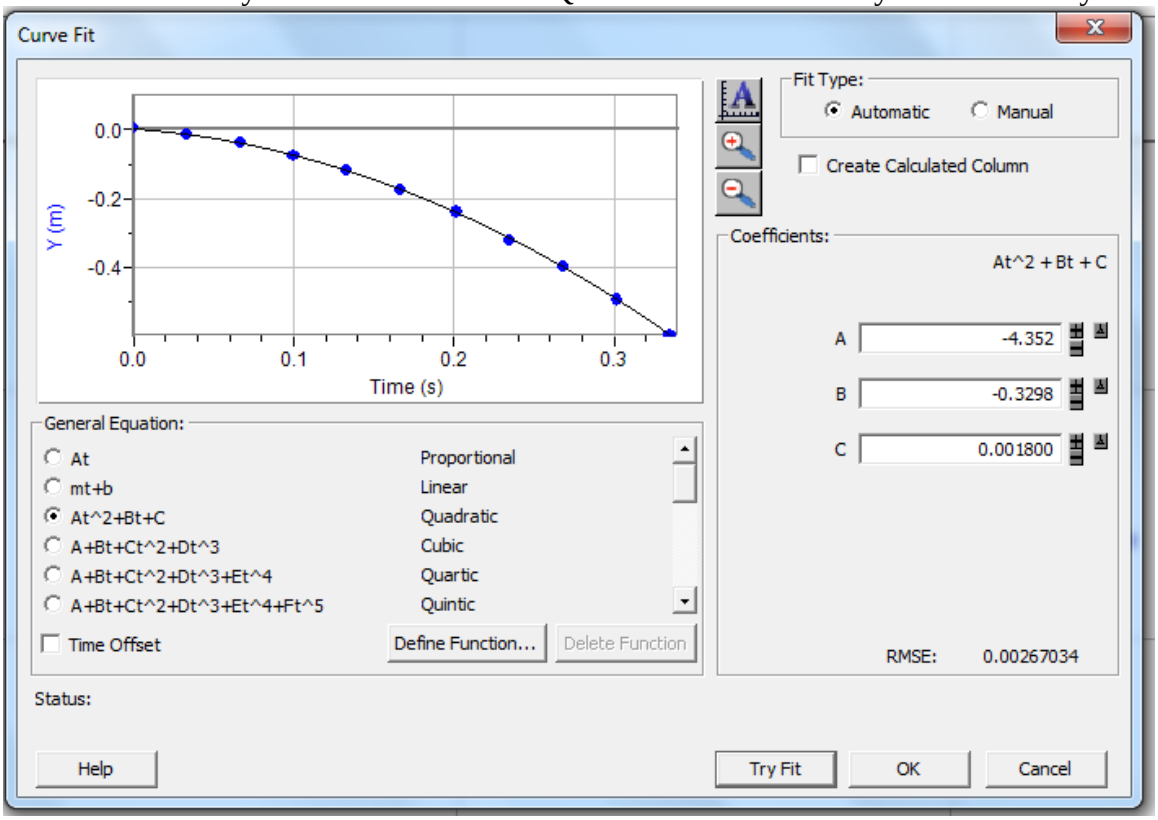
11. Click on the Add Point Button  . Then Click on the object. The computer should mark the point with a blue dot and move the video one frame forward. Click on the object again. The computer then will mark the point with another blue dot and move the video one frame forward. Continue to follow the motion of your object in this manner. If moving one frame is not working you may use the frame advance key  to move ahead multiple frames.



12. Click on the left side of the graph and set it for the axis on which the measured motion is to be analyzed.



13. Go to Analyze→Curve Fit Choose Quadratic Fit Then hit Try Fit followed by OK.



14. Note that the values A,B,C correspond with values in the S formula in the following manner:

Xi= C
Vi= B
Acceleration= 2A

Perform the Analysis on the following videos. The data box in each video printout should contain the values for starting point (xi), velocity initial (vi), and acceleration.

Video	Reference Point	Value	1st Frame	Reason for Using
What Falls First..	Magnet to Floor	.60m	Masses side by Side	Verify with Earth's Gravity
Jump	Astronaut Height	1.65m	Astronaut leaves ground	Measure Moon's Gravity
Six Clips of….*	Astronaut Height	1.65m	Frame object leaves	Measure Moon's Gravity
Hammer Feather	Astronaut Height	1.65m	Frame object leaves	Measure Moon's Gravity and lack of air
LEM Launch	Height of LEM	5.55m	Frame Engine Starts	Measure Moon's Gravity Against LEM specs

LEM Assent Mass: 4547 kg
LEM Assent Thrust: 16 kN

Expected Acceleration on the Moon
= Fnet/m
=(Thrust-Weight)/mass
=(16000-4547*1.62)/4547=1.898 m/s^2

*Recommend Throw 2 and 6

AP Physics/ Advanced

Video	Reference Point	Value	1st Frame	Reason for Using
Apollo 13	Height of Rocket:	110.6m	Leaving Pad	Measure Earth's Gravity Against Saturn V specs

Saturn V Rocket as prepared for Moon Launch

Mass: 3.039E6 kg

Thrust from First Stage Main Engines: 34.02E6 N

Estimated Acceleration at Launch
a=Fnet/mass
a=34.02E6-3.039E6*9.8)/3.039E6= 1.39 m/s^2

At first it almost looks as if this Saturn V is launching "Lite" But remember that this rocket is throwing off large amounts of mass as the fuel burns. Therefore the acceleration is not constant as represented in a quadratic solution. So a more detailed analysis is needed. Consider using a cubic analysis.

Step 4: Write a lab report in Microsoft Word. The goal is to talk about the video analysis process and to provide evidence to support your answer to the question: Did We Go to the Moon?