Preview File Edit View Go Tools Window Help

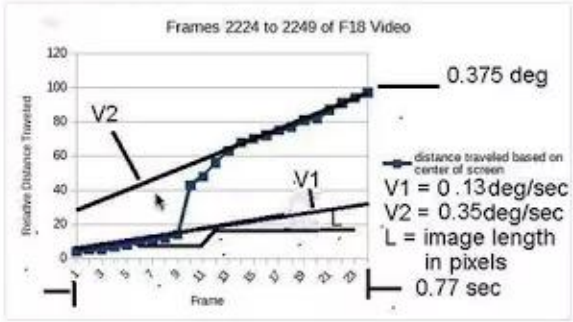
Fri Dec 22 9:19 AM Mick

Adobe Photoshop CC 2018

20171222-085706-8nwti.jpg

Bruce Maccabee
December 18 at 4:54pm

Graph of angular displacement relative to the center of the FOV.
I assume the angular field of view is 0.75 deg so half the FOV (center to left edge) is 0.375 deg. On the vertical scale at the left 100 corresponds to 0.375 deg at the left side of the video image. The graph of V1, the leftward component of angular velocity, has a slope that corresponds to about 0.13 deg/sec = 0.0023 radians/sec and V2 after an abrupt turn to the left, corresdponding to a brief acceleration, is about 0.35 deg/sec = 0.0061 rad/sec. The most rapid change in velocity occurred during about 3 frames (at 30 frames/sec) or 3 sec x(1/30 sec) = 0.1 sec so the average acceleration over this short time was about (0.0061 - 0.0023)/(0.1) = 0.038 rad/sec^2. Multiply radians by distance to get actual acceleration (component transverse to line of sight). At 1 nm = about 6000 ft, this angular acceleration is about 6000 ft x 0.038 rad/sec^2 = 230 ft/sec^2 = 7 "g" where "g" is the acceleration due to gravity at the earth's surface, 32 ft.sec^2. The line labelled L is the horizontal dimension (component perpendicular to the LOS) of the image. The length in the direction of travel depends upon the speed and the exposure time as well as upon the inherent length of the object/light. The sudden increase in length is evidence of high acceleration for a short time followed by a constant velocity, V2. NOTE 1) This is a preliminary evaluation NOTE 2 the actual speeds calculated by the method above depends on the assumed distance from the plane to the object. If the distance were other than 6000 ft then the acceleration would be other than 230 ft/sec^2.



Like Comment Share

Color Swatches

Properties Adjustments Libraries Info

Doc: 1.06M/6.09M

Click and drag to interact with the 3D scene.

Layers Channels Paths

Graph
Tracer
2X
Video Group 1
1X Frames 2224 to 2249
Black Background

Timeline

Graph
Tracer
Position
Opacity
Style
2X
Video Group 1
1X Frames 2224 to 2249
Black Background

1
00:00:05,269 --> 00:00:01,969
there's been some discussion about how

2
00:00:08,660 --> 00:00:05,279
these infrared videos show impossibly

3
00:00:10,759 --> 00:00:08,670
high accelerations and g-forces this is

4
00:00:12,589 --> 00:00:10,769
the end of the nimitz video where the

5
00:00:15,980 --> 00:00:12,599
UFO shoots off and it looks like it

6
00:00:17,480 --> 00:00:15,990
accelerates very rapidly you can see

7
00:00:19,720 --> 00:00:17,490
here it's going slowly and then suddenly

8
00:00:23,929 --> 00:00:19,730
BAM it starts going really fast and

9
00:00:26,029 --> 00:00:23,939
someone pointed me to this analysis by a

10
00:00:28,970 --> 00:00:26,039
retired physics professor who calculates

11
00:00:32,420 --> 00:00:28,980
a massive g-force at this point in the

12
00:00:35,389 --> 00:00:32,430
graph where it goes from the v1 velocity

13
00:00:40,639 --> 00:00:35,399

1 to V to velocity 2 and you can see

14
00:00:42,350 --> 00:00:40,649
this here in the video where it the U of

15
00:00:43,940 --> 00:00:42,360
her suddenly jumps there and it speeds

16
00:00:47,600 --> 00:00:43,950
up and that corresponds to this point

17
00:00:50,750 --> 00:00:47,610
here so here it's going this velocity

18
00:00:53,060 --> 00:00:50,760
and here it's going at this velocity

19
00:00:54,470 --> 00:00:53,070
with this sudden jump in the middle and

20
00:00:57,380 --> 00:00:54,480
the impossible g-forces

21
00:00:59,450 --> 00:00:57,390
however he misses the fact that this

22
00:01:02,180 --> 00:00:59,460
coincides with a change in the zoom

23
00:01:06,469 --> 00:01:02,190
level from one point zero to two point

24
00:01:09,170 --> 00:01:06,479
zero and to get it that means that to

25
00:01:11,030 --> 00:01:09,180
get an accurate track of the object we

26
00:01:14,270 --> 00:01:11,040
need to shrink down the second half of

27
00:01:18,289 --> 00:01:14,280
the video by 50% so I've done that here

28
00:01:19,580 --> 00:01:18,299
and now if you look at the motion of the

29
00:01:22,670 --> 00:01:19,590
object you can see there really isn't

30
00:01:26,330 --> 00:01:22,680
any speed up at all the object in fact