# Physics 2100 - Newton's 2nd Law

Because we used different equipment from that used in your lab manual, our masses will be different.

Instead of using five 20 gram weights, we used five 10 gram weights. The mass of our hook was 5 grams while the mass of our cart was 271 grams. The following two tables reflect what was done in the video.

Part I		
Run	**Hanging mass (g)**	**Cart mass (g)**
1	15	271+40
2	25	271+30
3	35	271+20
4	45	271+10
5	55	271

Part II		
Run	**Hanging mass (g)**	**Cart mass (g)**
1	25	271
2	25	271+100
3	25	271+200
4	25	271+400
5	25	271+450

Here is a graph of the five separate runs for part I. Although only velocity versus time is required, position is shown as well.
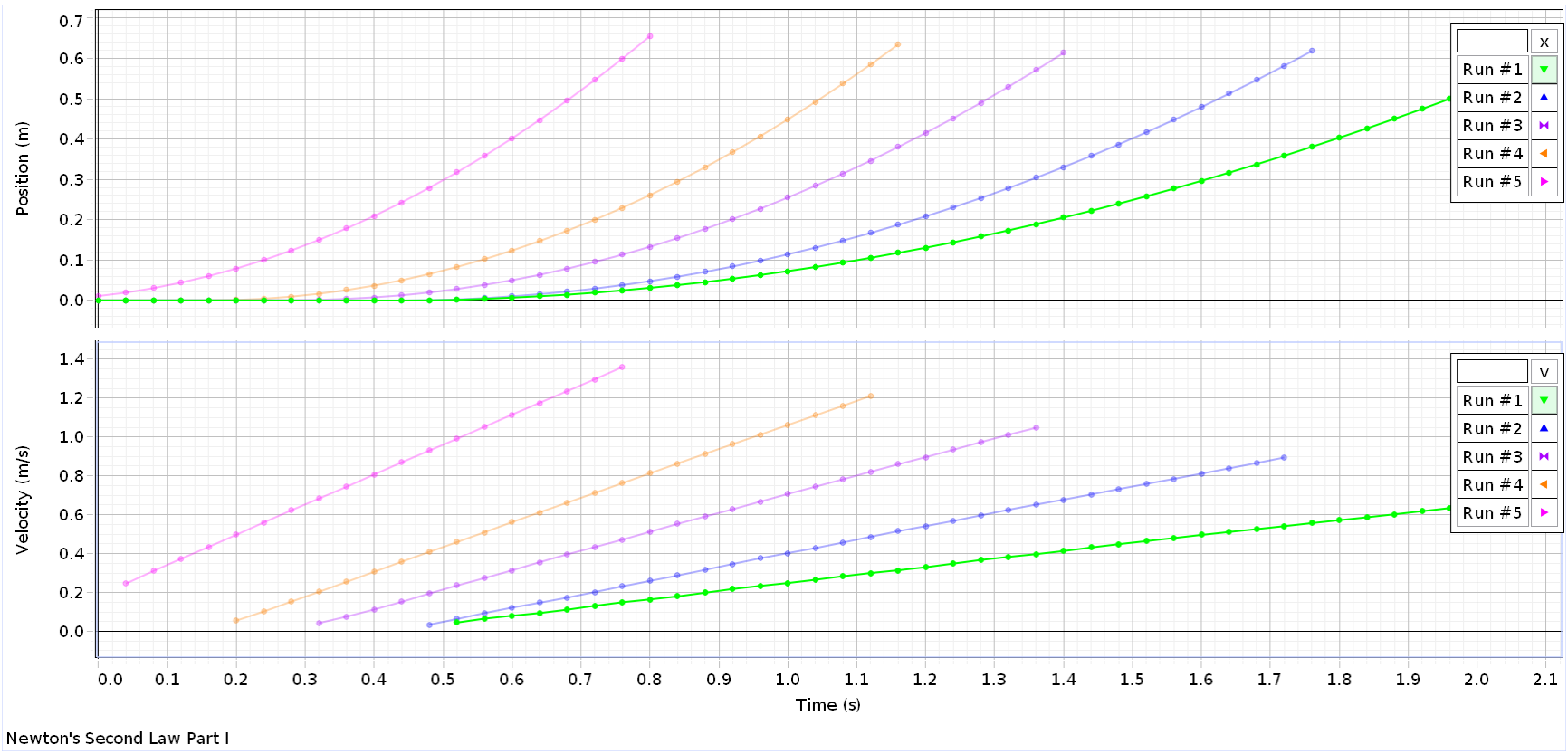

Newton's Second Law Part I

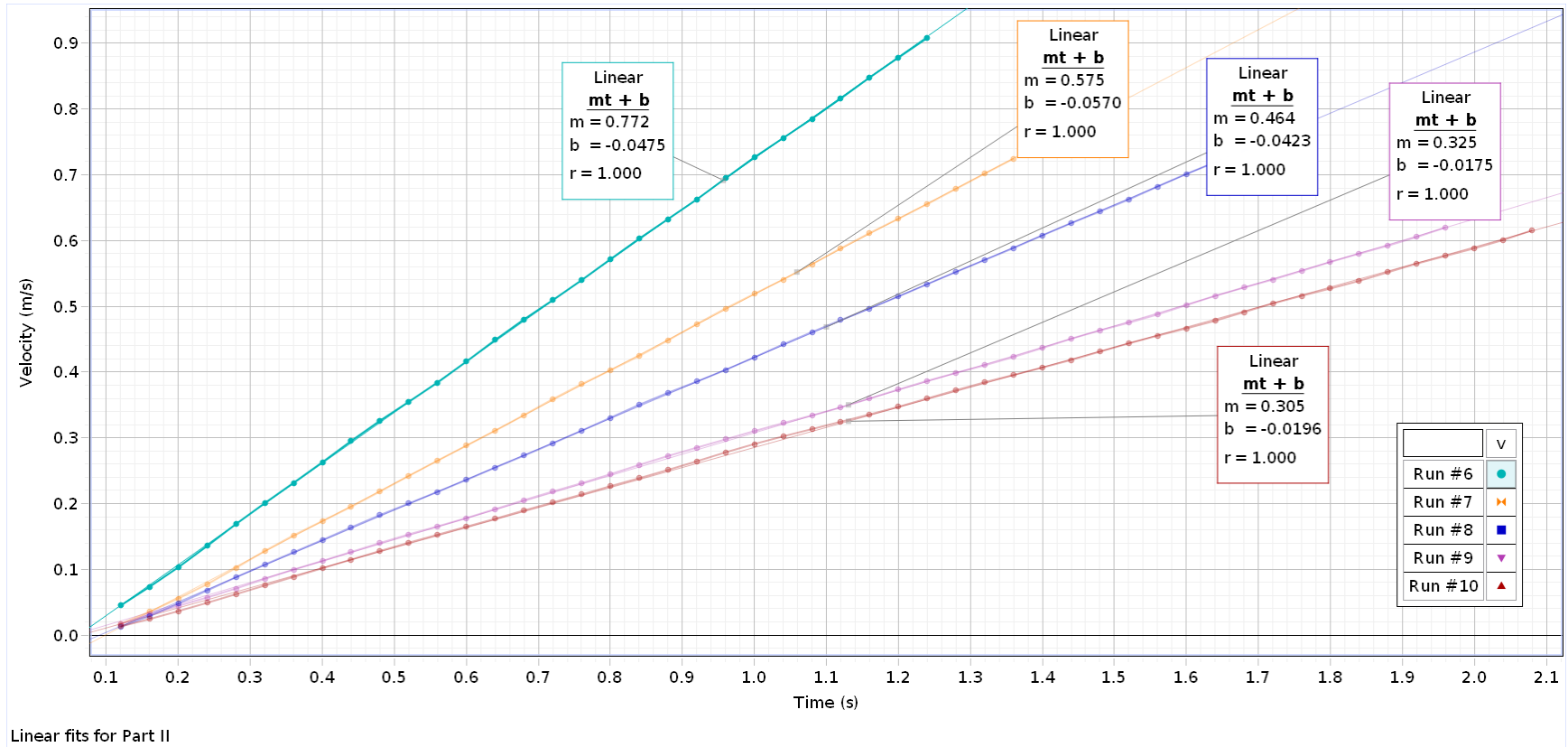The following graph shows linear fits for each run (part I).

Linear
mt + b
m = 1.26
b = -0.197
r = 1.000

Linear
mt + b
m = 0.974
b = -0.271
r = 1.000

Linear
mt + b
m = 0.694
b = -0.294
r = 1.000

Linear
mt + b
m = 1.54
b = 0.188
r = 1.000

Linear
mt + b
m = 0.407
b = -0.160
r = 1.000

	v
Run #1	▼
Run #2	▲
Run #3	►◄
Run #4	◄
Run #5	►

Velocity (m/s)

Time (s)

[Linear fits for Part I]
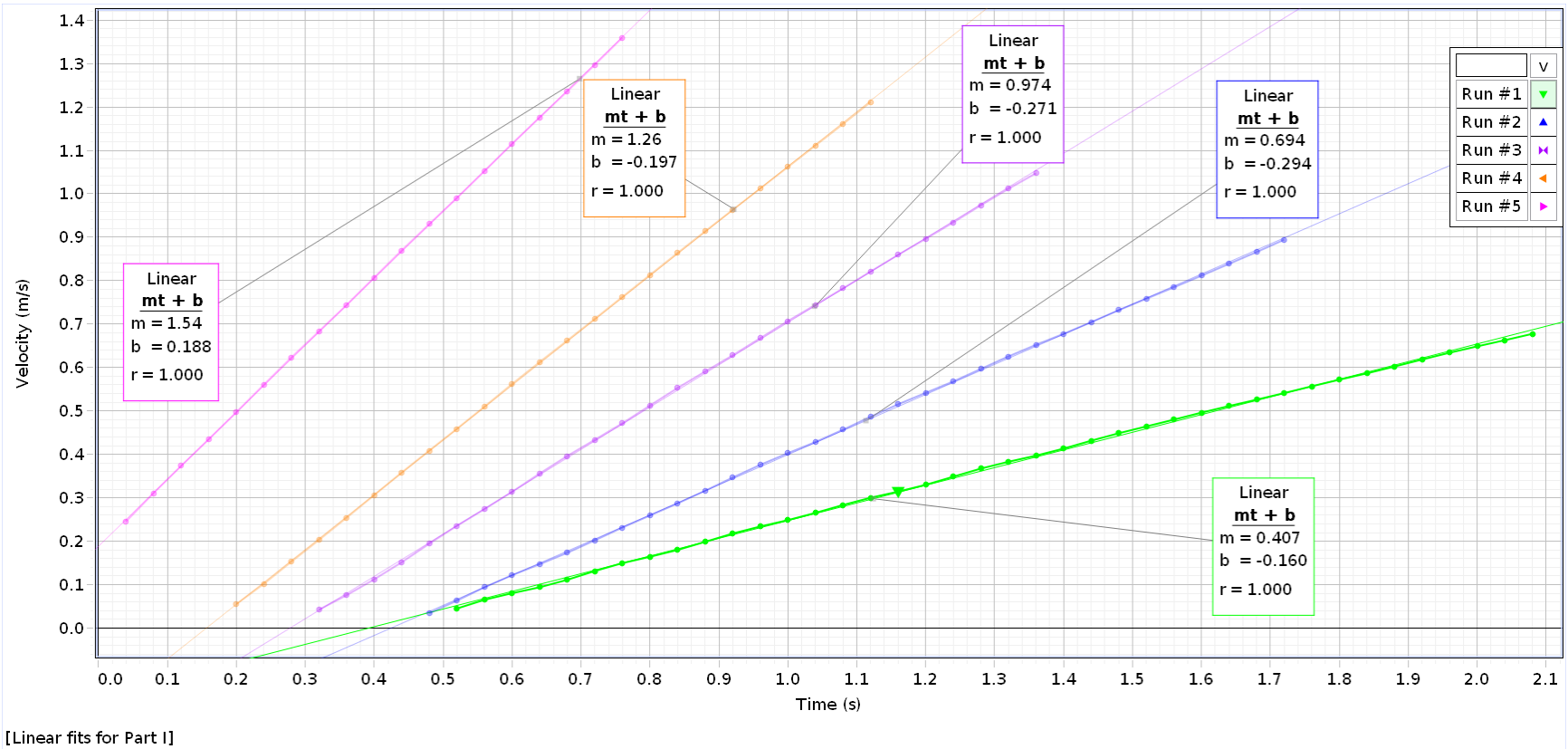
Here is a graph of the five separate runs for part II. Although only velocity versus time is required, position is shown as well.

The five runs in part II are labeled six through ten.

Newton's 2nd Law Part II
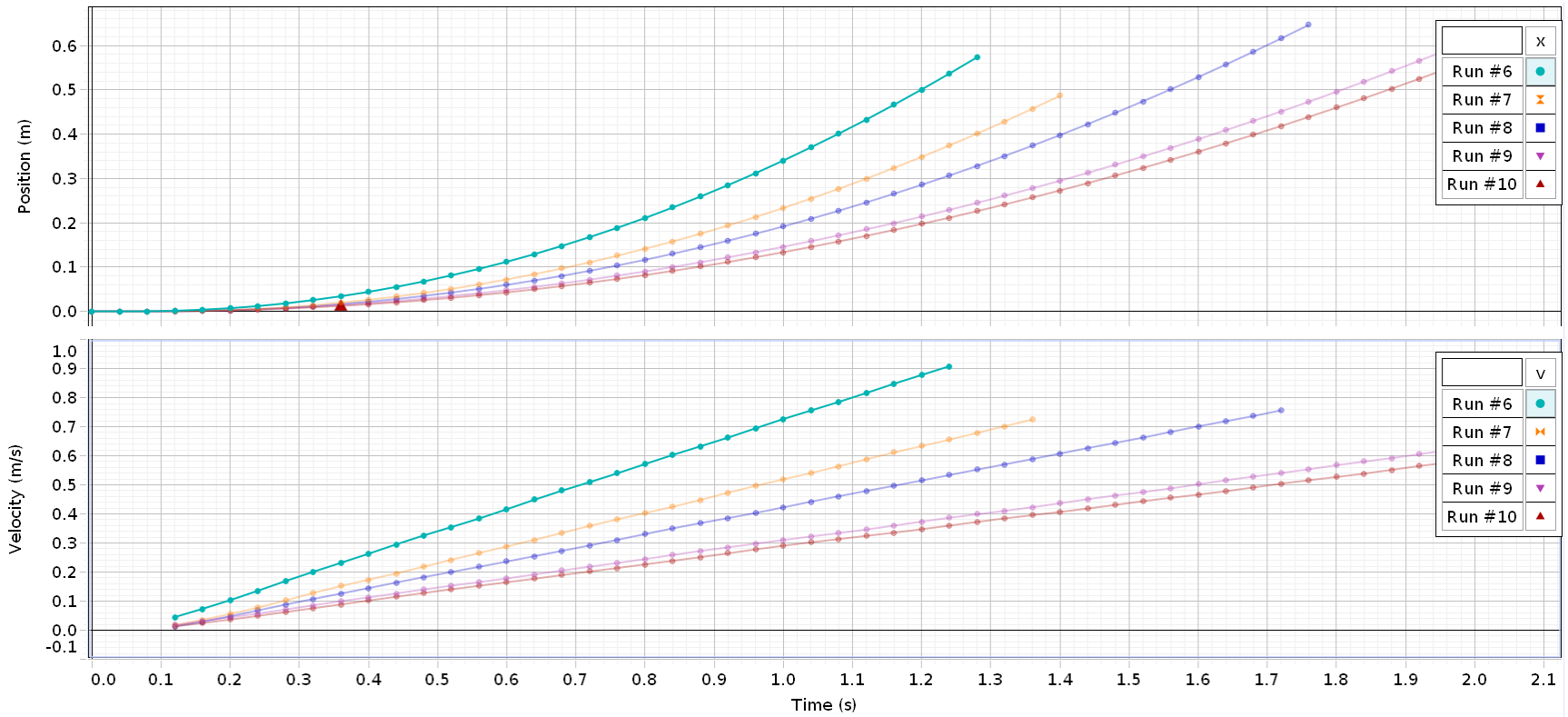
The following graph shows linear fits for each run (part II).

Linear fits for Part II