	TEAM: RED	
	Belgium	Jakob De Schepper Ine Coucke Guillian Richard Amelie Glorieux
	France	James, Bunklushan, Alexandre
Hit that ball!	Italy	Elisa, Rocco, Prianka, Nicola
	EXPERIMENT: difference between three balls in free fall	

1. ORIENTATION

1.1. Research question:

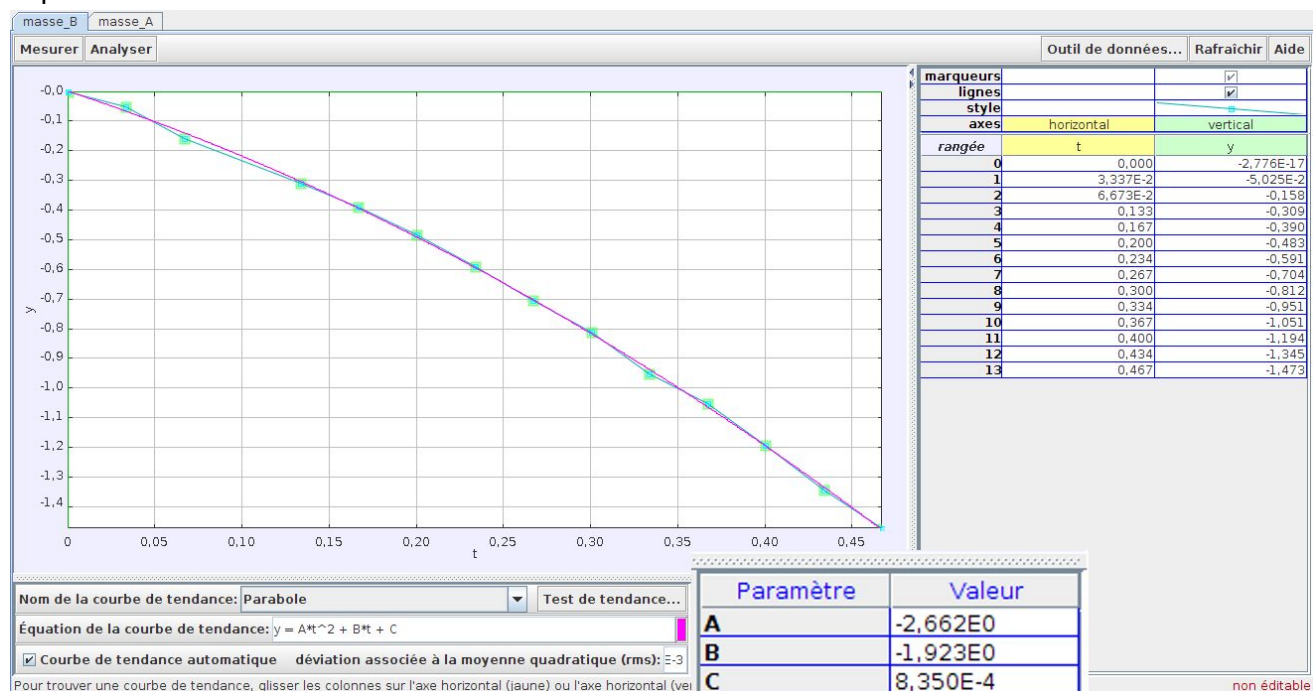
What will be the difference when you release a basketball, a football and a volleyball at the same time, from the same height?

Sub-questions:

Which ball will be the first to reach the surface?

What's the speed of the ball right before it touches the ground?

Experiment



1.2. Hypothesis

We suspect that the three balls will hit the ground, with not that much difference in time.

The largest and heaviest ball will reach the surface first, due to the friction force of the air against the ball. We think that this will be the basketball followed by the football and as last the volleyball.

2. PREPARATION

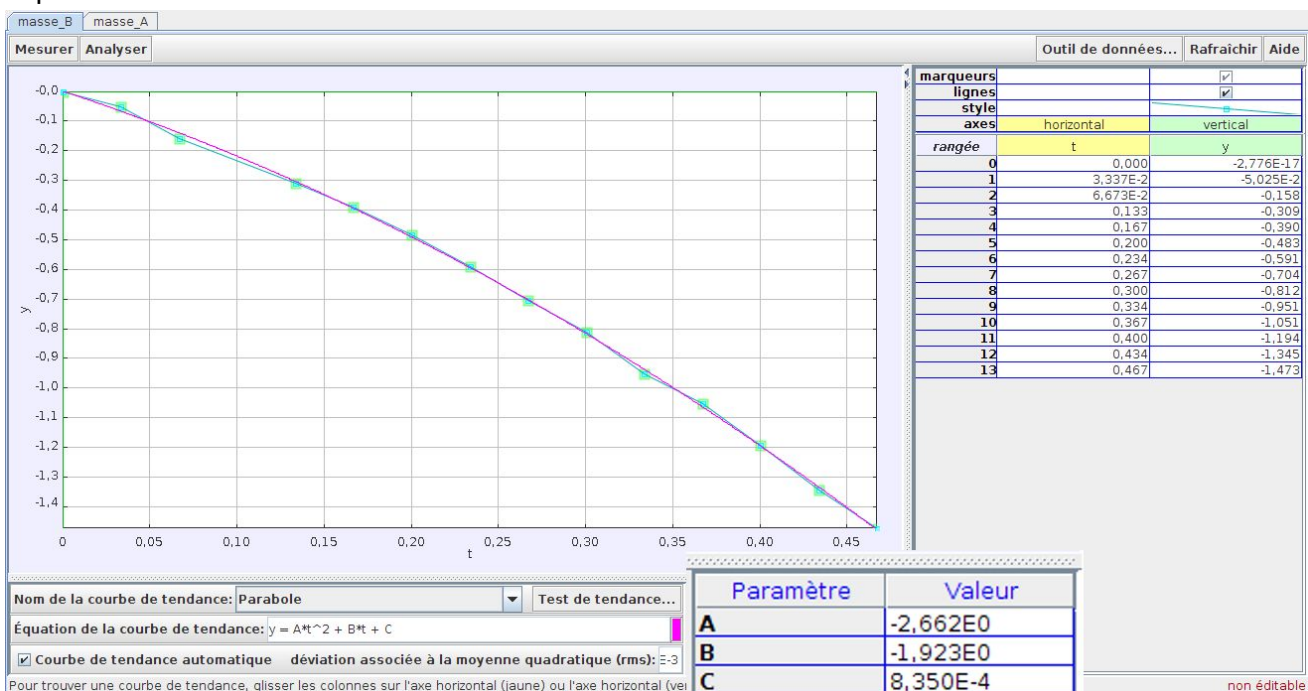
2.1. Material:

- Football
- Basketball
- Volleyball
- Camera
- Colored sellotape

2.2. Method:

- Put two pieces of the colored sellotape half a meter apart from each other, this will be used as a reference distance for tracker, the program we're working with.
- Let the first ball fall while filming it, make sure that the whole trajectory is filmed.

Experiment

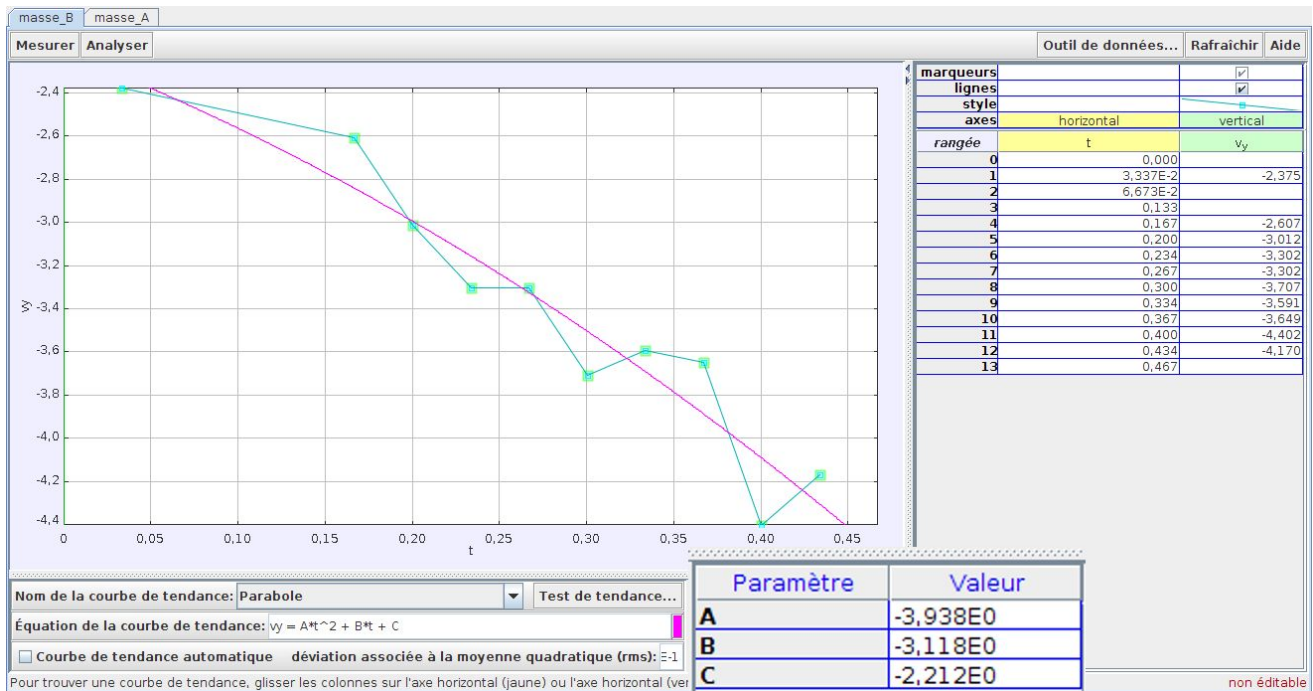


- Let the second ball fall from the same height and film it too.
- Do the same thing with the third ball
- Put the recordings in the drive

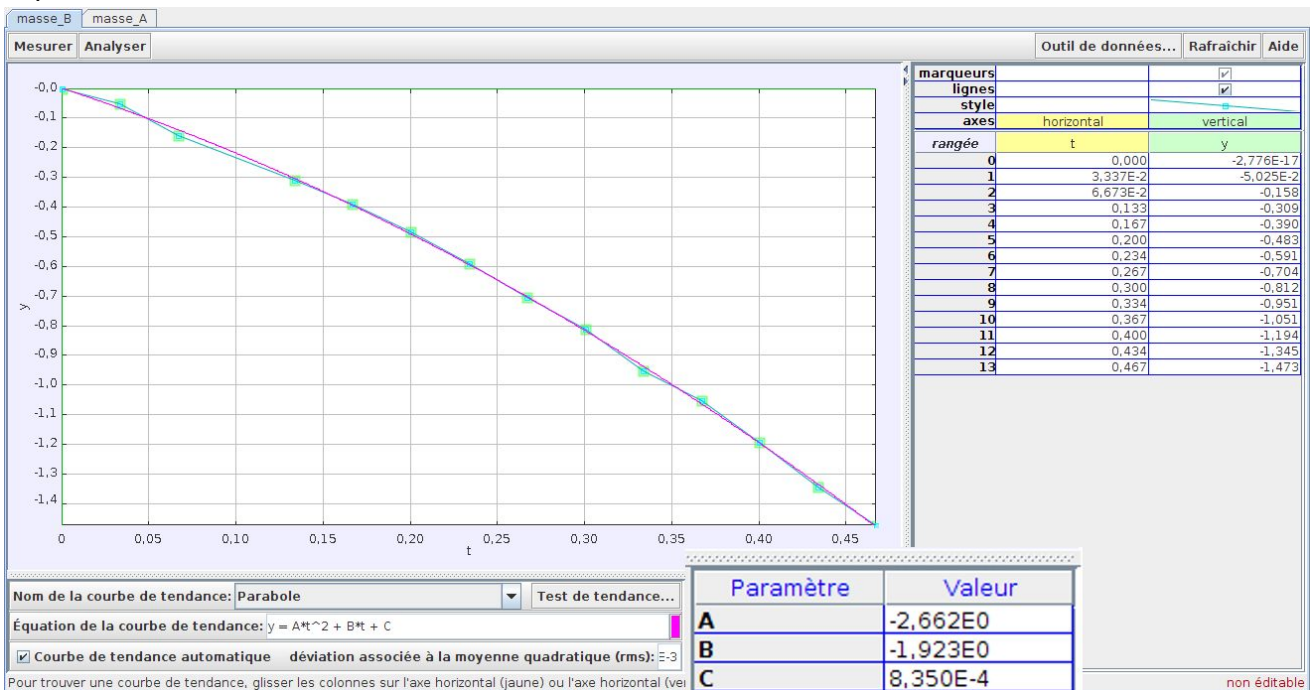
3. DATA ANALYSIS and DISCUSSION

3.1. Observations and Measurements:

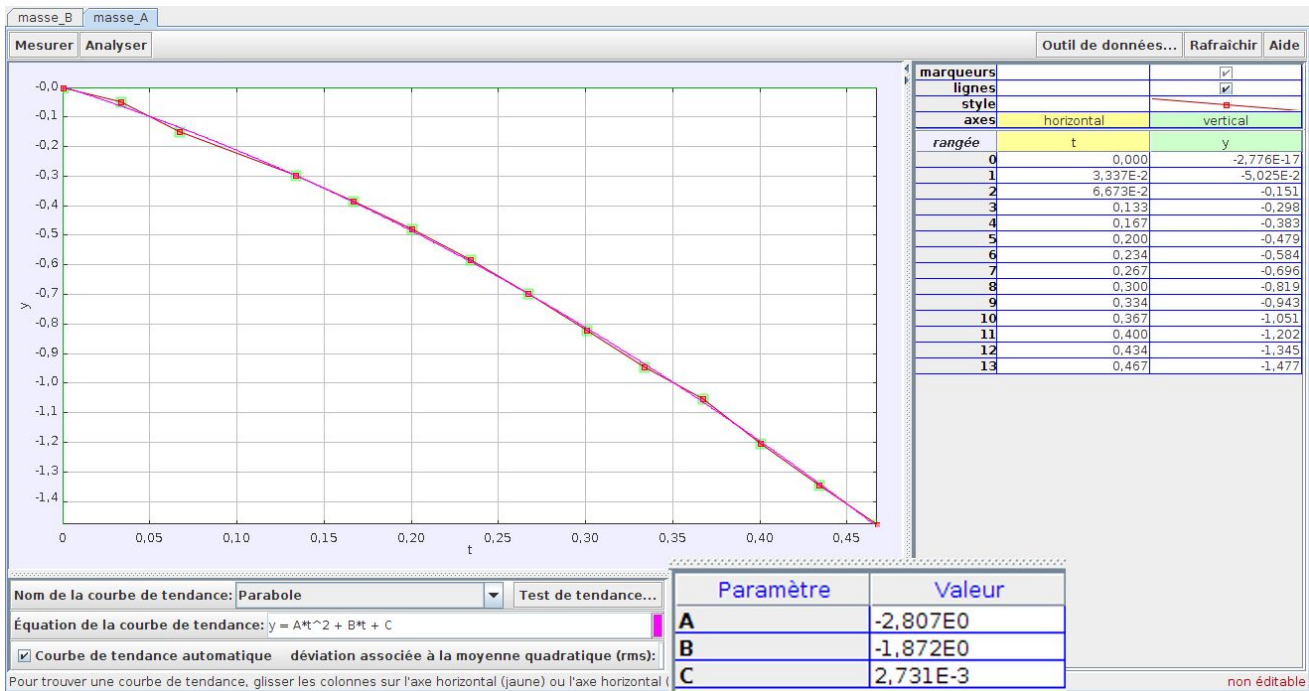
Experiment with basket ball from Italy analysed by French



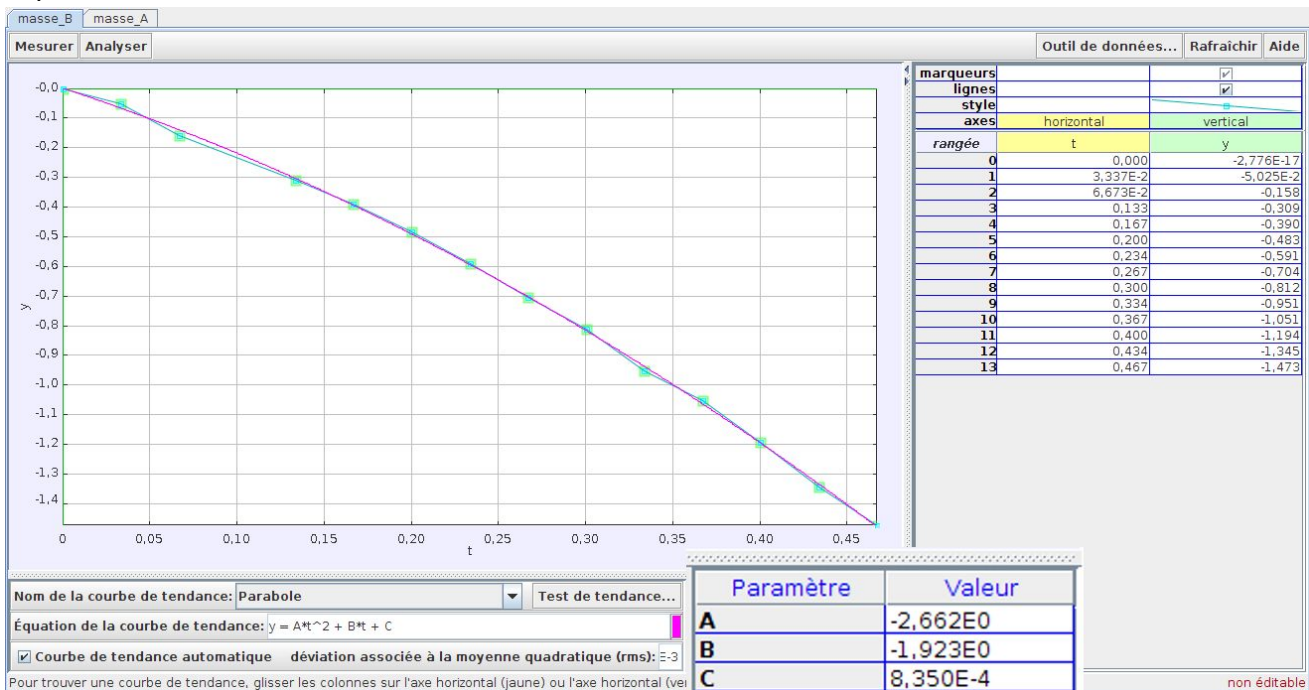
Experiment

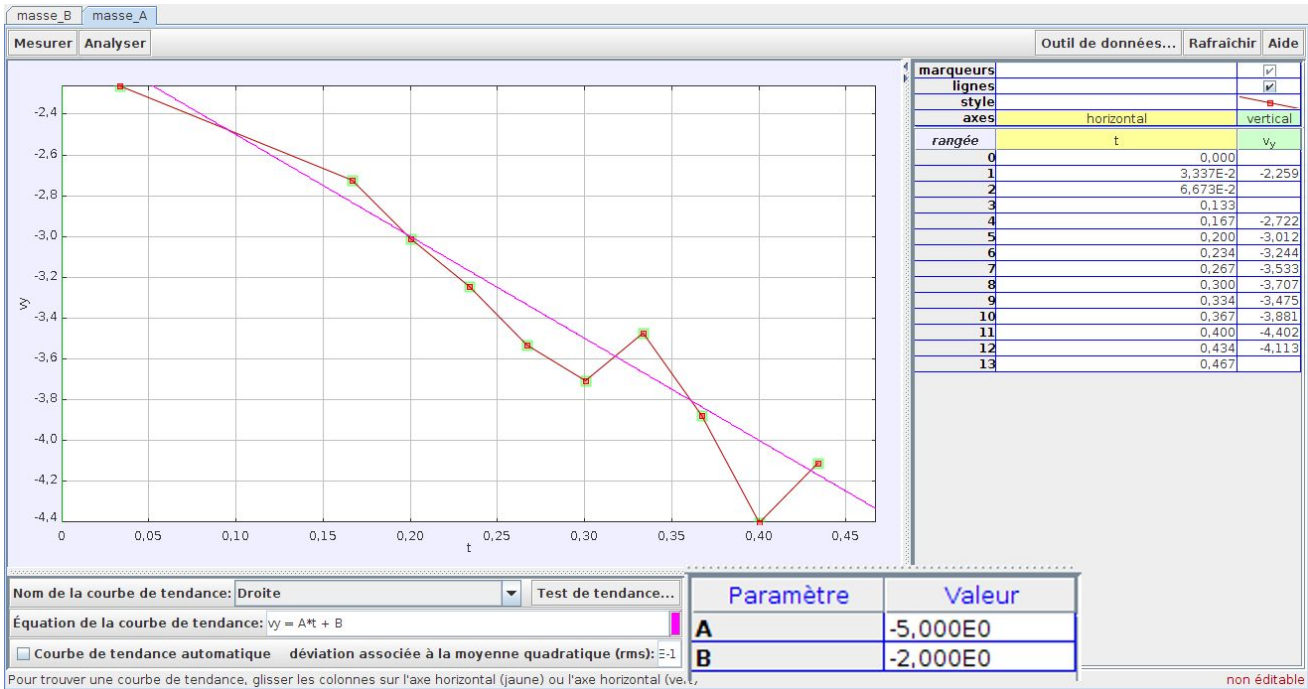


Experiment with foot ball from Italy analysed by French

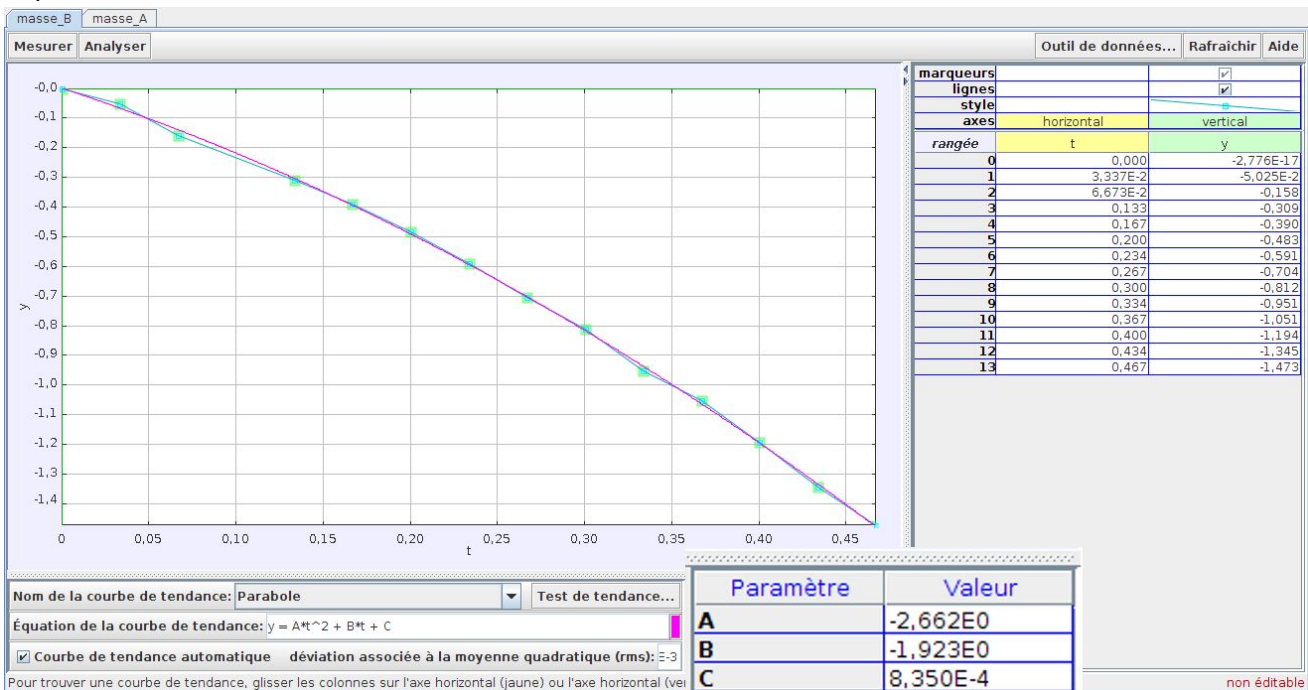


Experiment

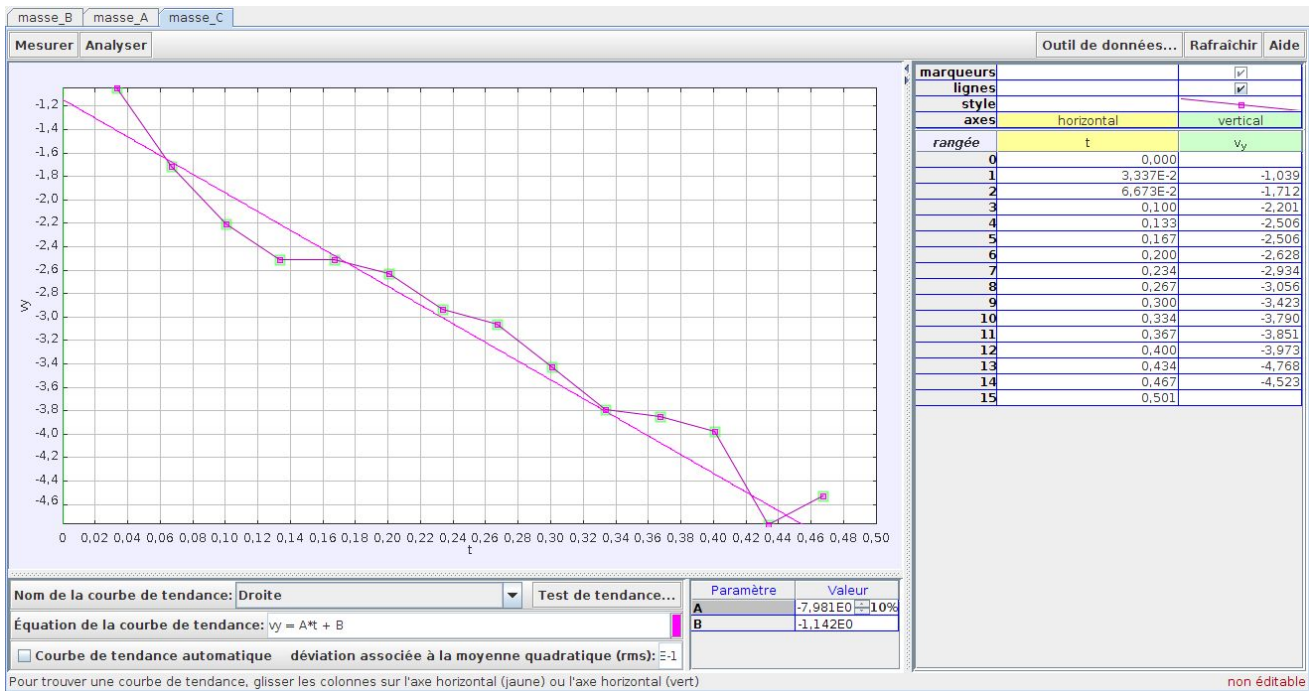




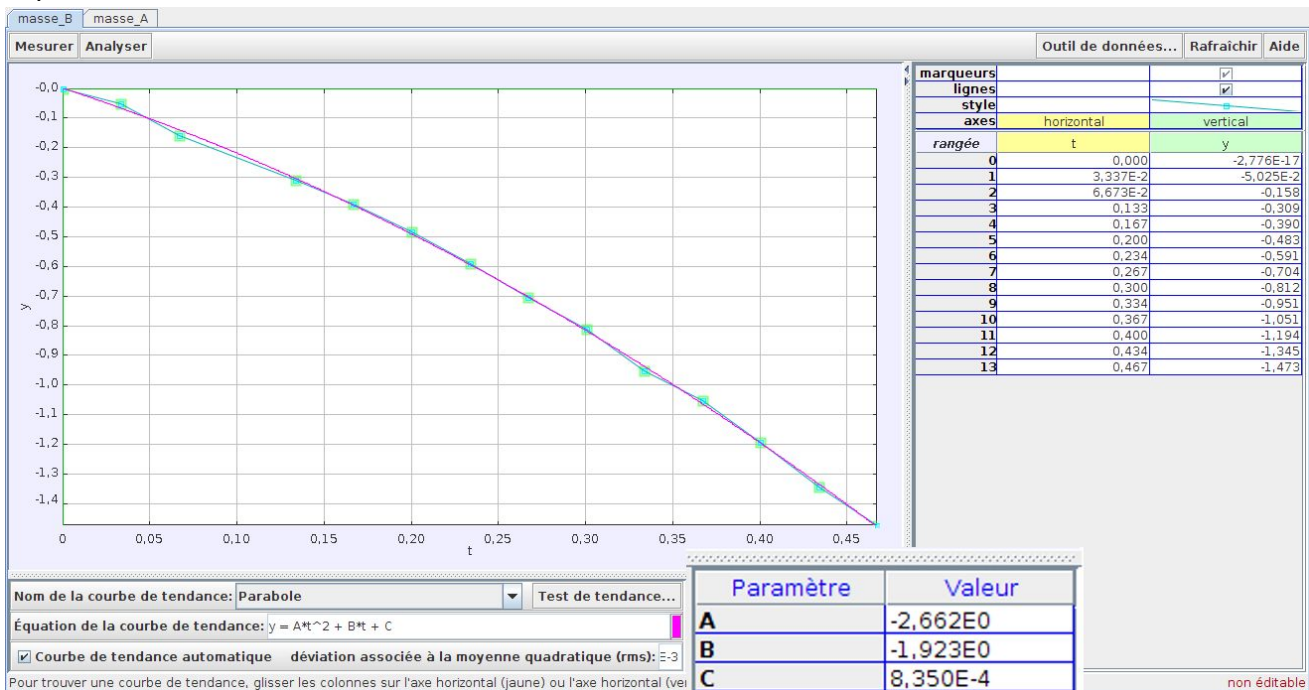
Experiment

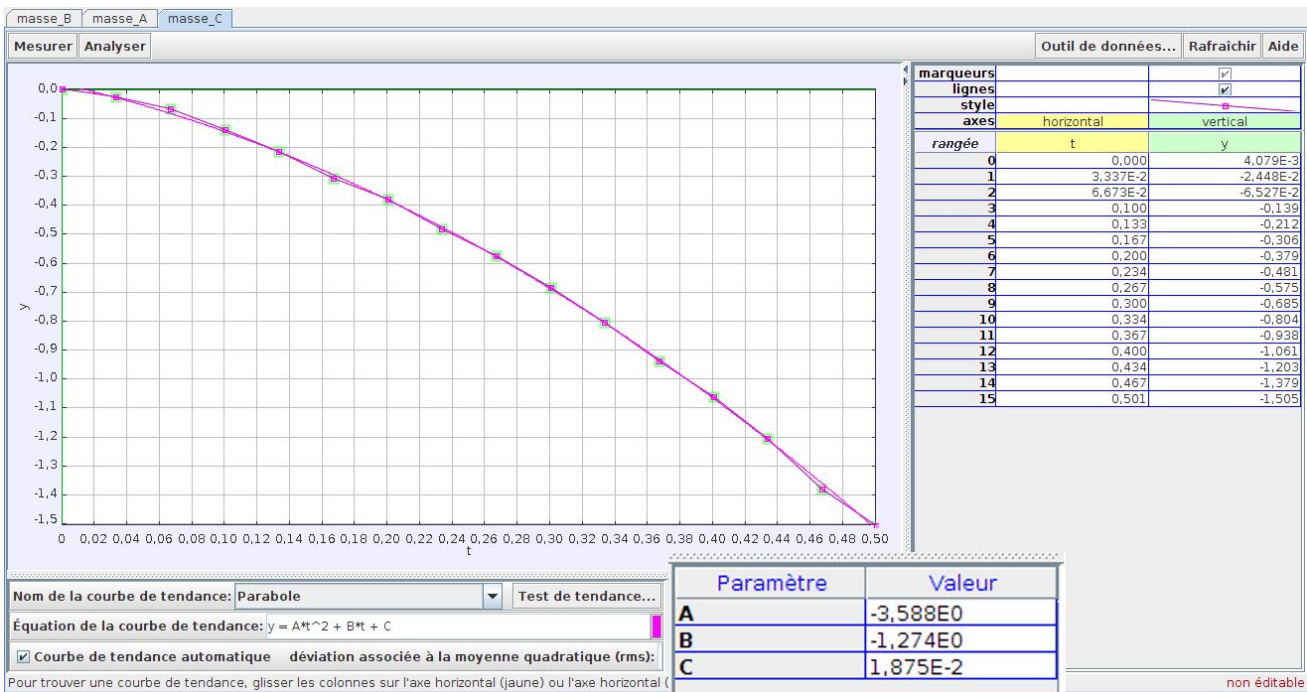


Experiment with volley ball from Italy analysed by French



Experiment



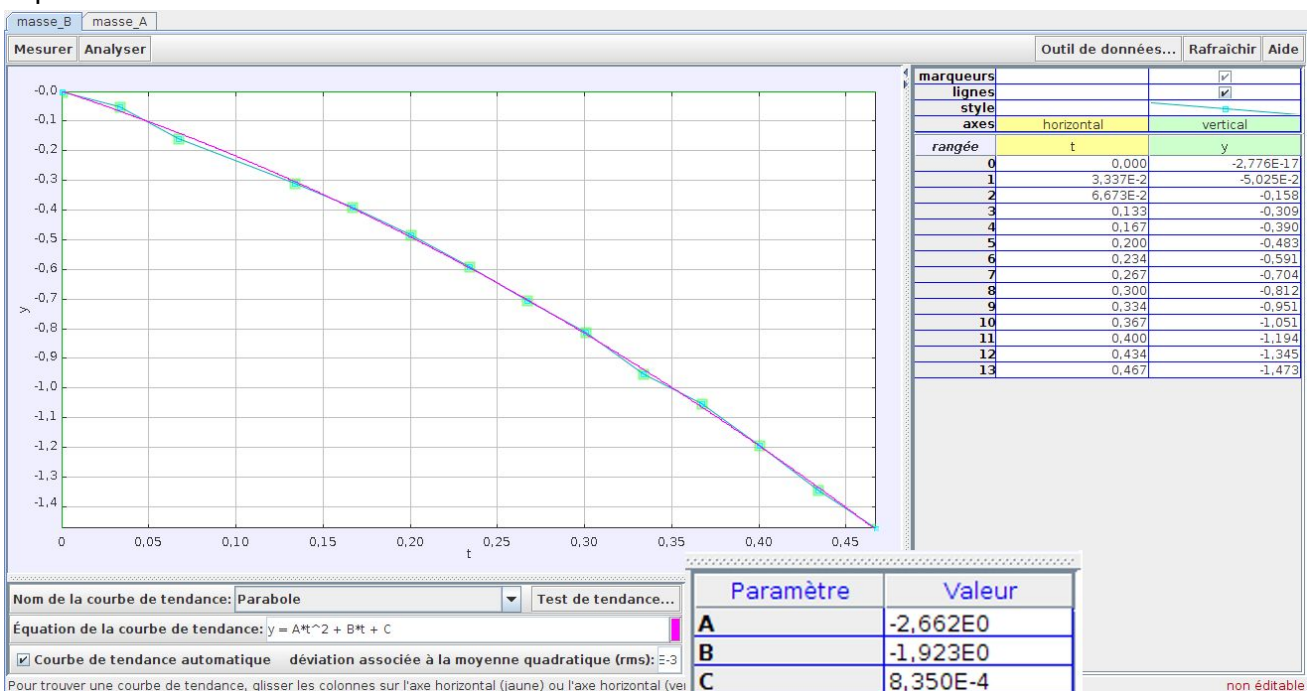


3.2. Discussion:

a. French discussion on Italian analysis of Belgian experiments

The Italian's analysis of Belgian experiments with the basketball, football and volleyball by the graphics aren't the same, because the weight and the size of the balls are different, and the values are approximatively close.

Experiment



4. REFLECTION

4.1. Conclusion:

4.2. Comparison of the results of the different countries

4.3. Reflection:

5. Observations and Measurements:

volleyball Belgian video by Italy

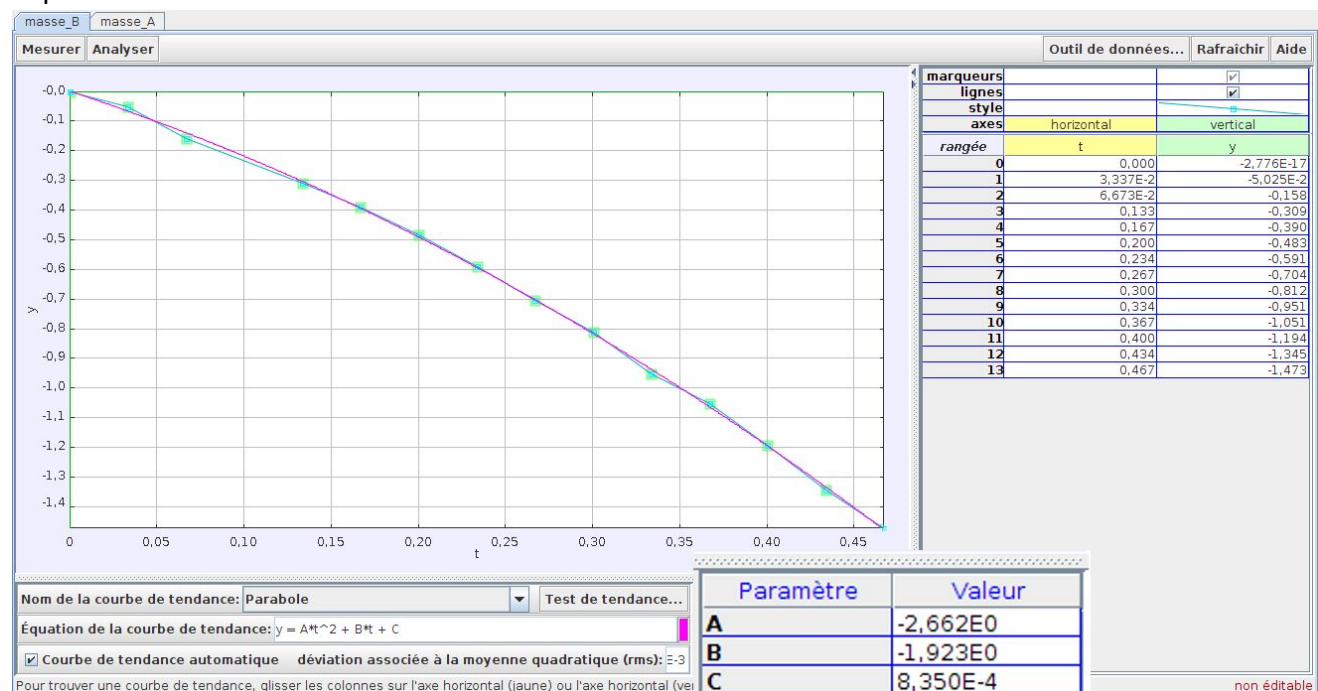


Trascinare le colonne della tabella sul giallo (asse orizzontale) o verde (asse verticale) per il fit della curva

non-modifica

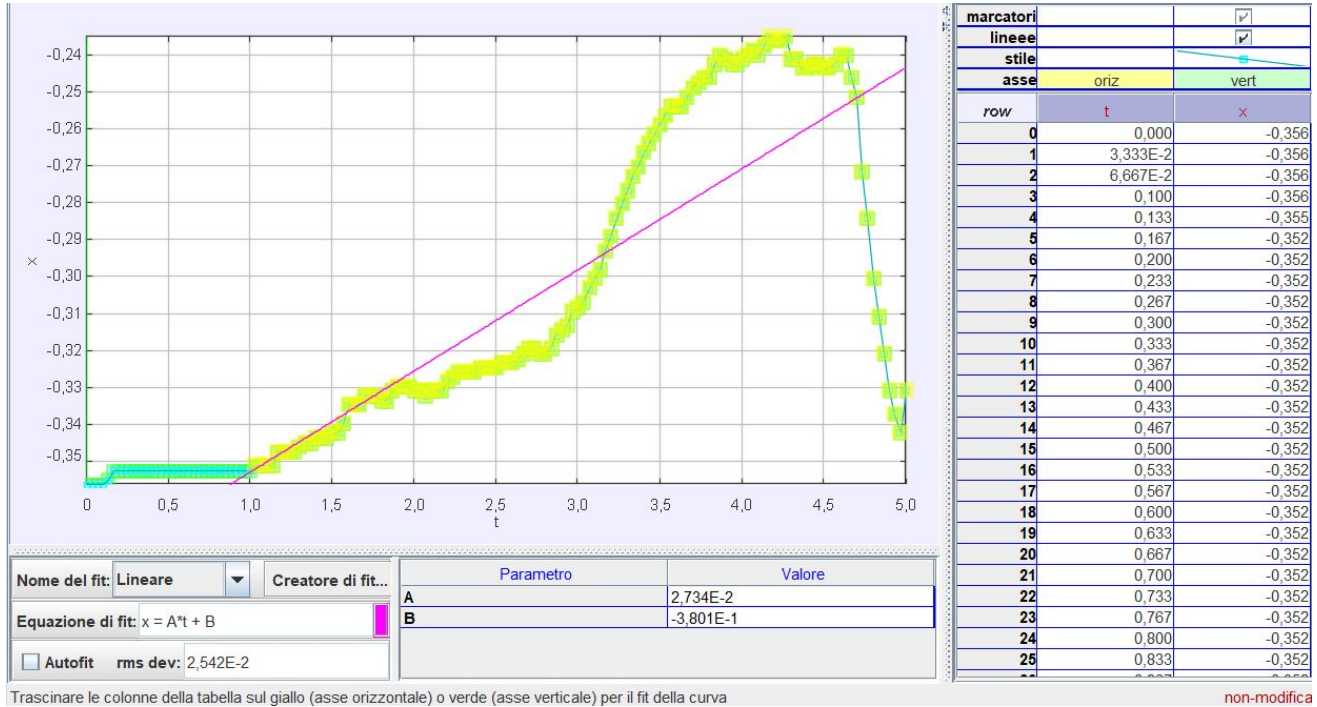
$$x = 1,7 \times 5 + (-5,8)$$

Experiment



non éditabile

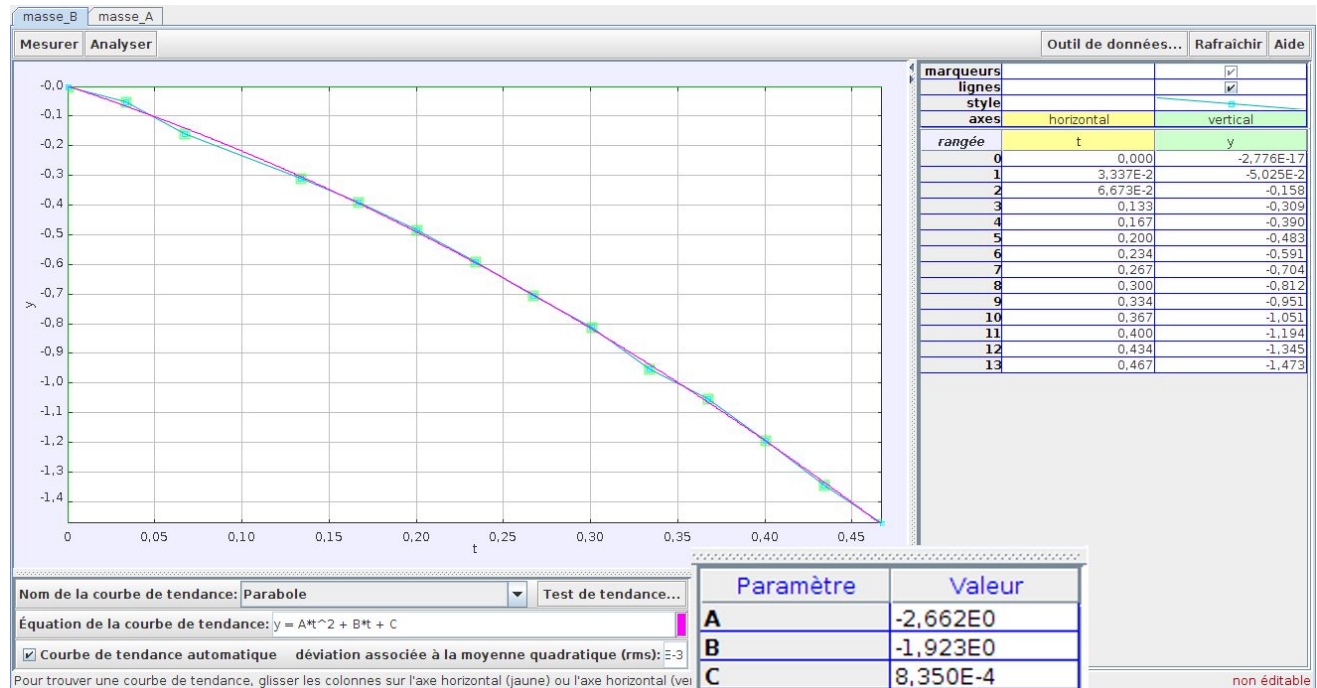
basketball Belgian video analysis by Italy

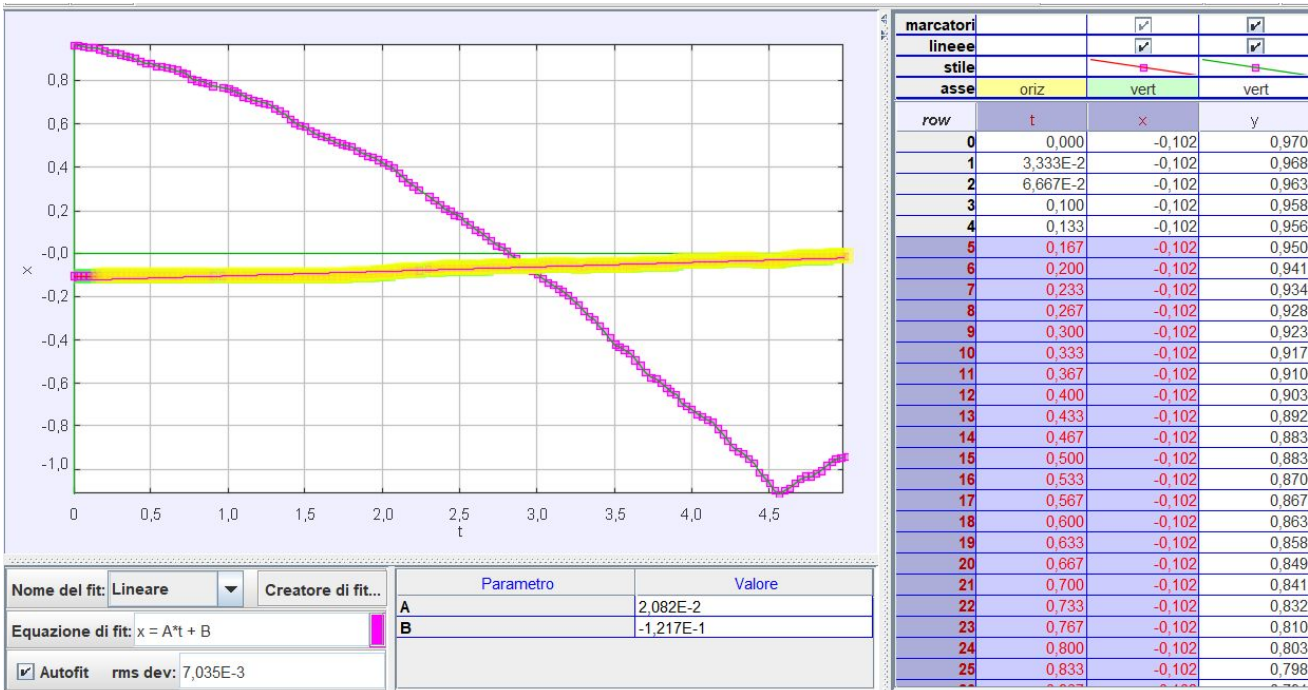


$$x = 2,8 \times 5 + (-3,8)$$

football Belgian video analysis by Italy

Experiment

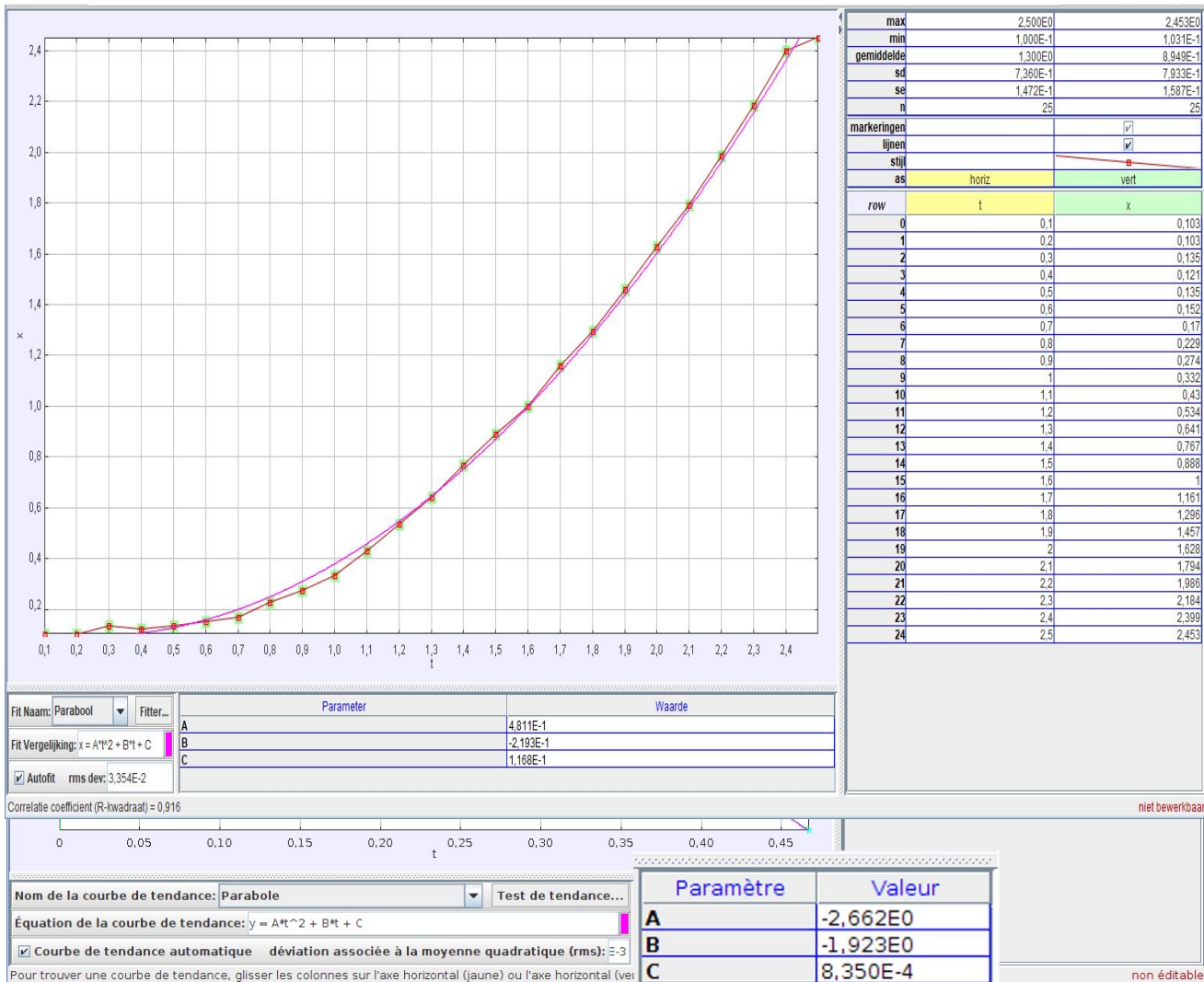




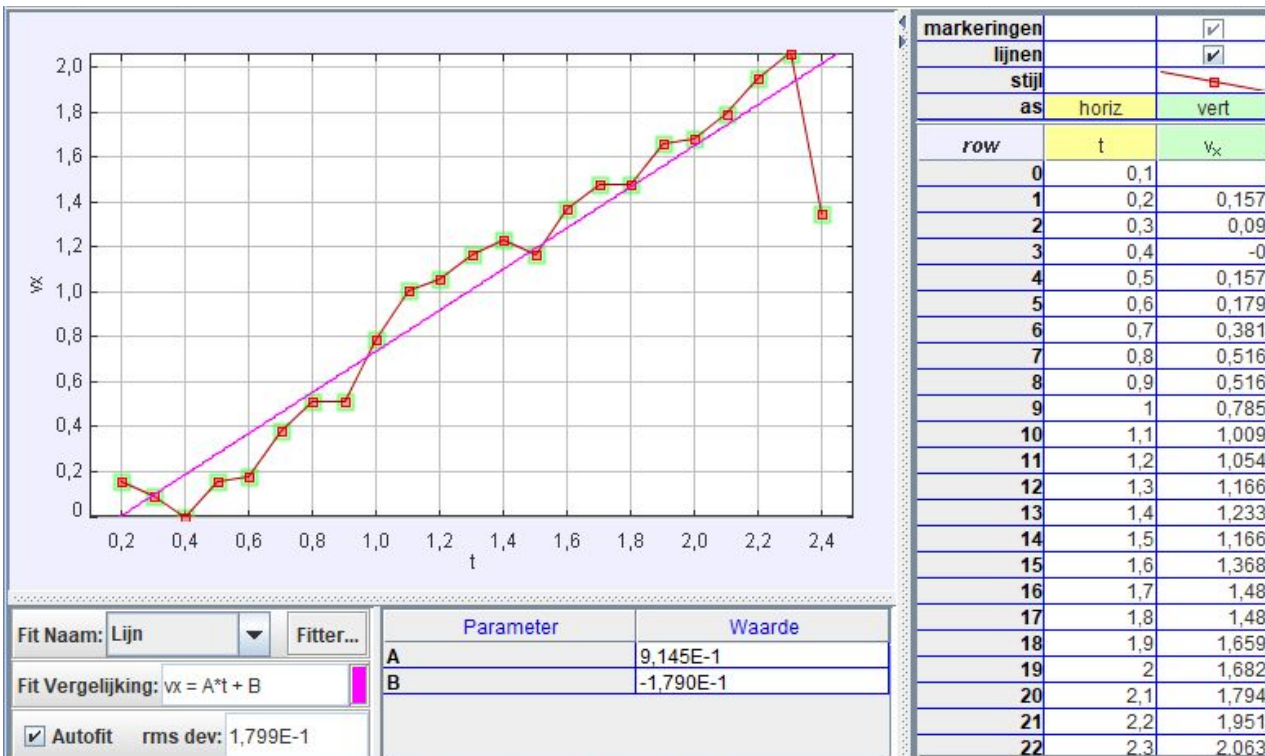
Premere i tasti Maiusc-S per commutare la lunghezza della linea di pendenza, Maiusc+ spazio per commutare il congelamento. Premere il tasto control per commutare la misura della funzione.

$$x = 2,1 \times 5 + (-1,2)$$

With the volleyball (French video analyzed by the Belgians):



Functievoorschrift: $0.4811t^2 + -0.2193t + 0.1168$

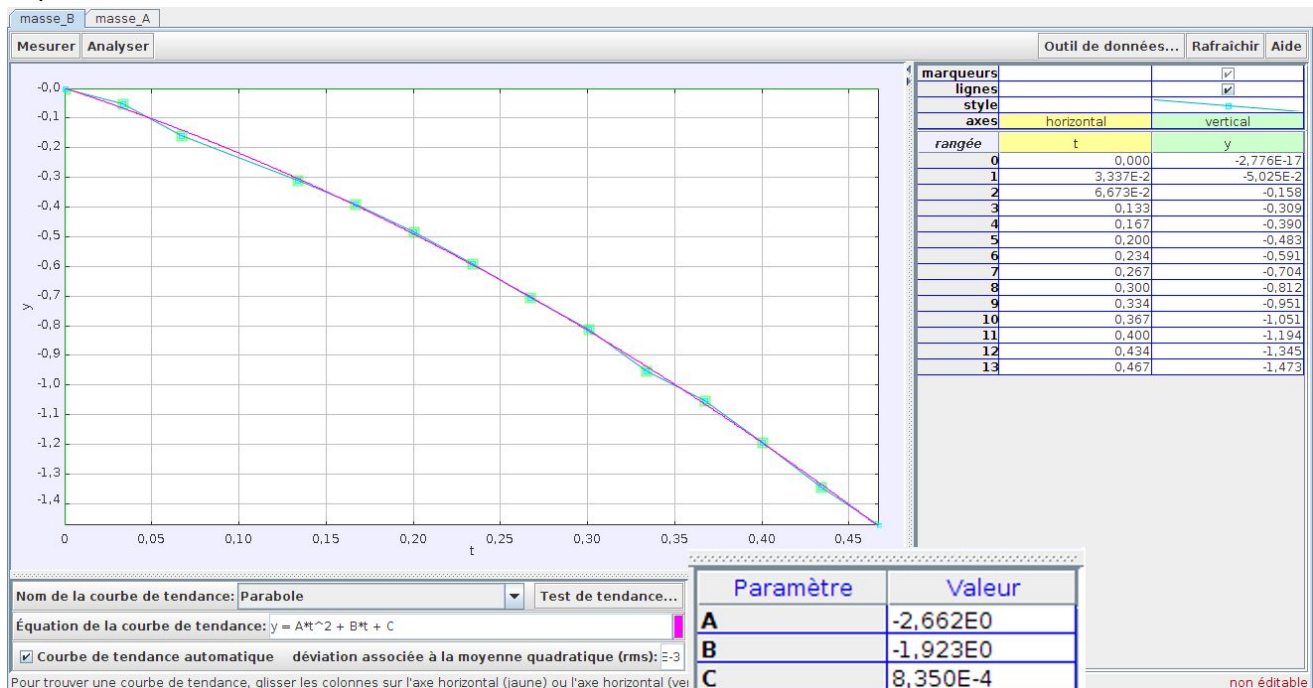


Functievoorschrift: $0.9145t + -0.1790$

5.1. Discussion:

Due to the bad quality of one of the French videos we were unable to utilize multiple kinds of balls in our project. This means we were only able to use the volleyball. The first graph was about the trajectory of the ball. In this graph we clearly see that the trajectory of the ball increases as the time advances. The second graph is about the speed of the ball. The graph of the speed is the

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derivative graph of the trajectory. This means that it has to be a straight line. The speed increases in a permanent matter.

6. REFLECTION

6.1. Conclusion: We are unable to form a conclusion to our questions because we only had one video that was good enough to analyze.

6.2. Comparison of the results of the different countries

6.3. Reflection: It was hard to work for us, the Belgian team, due to the bad videos of the French.

7. REFERENCES

Experiment

