

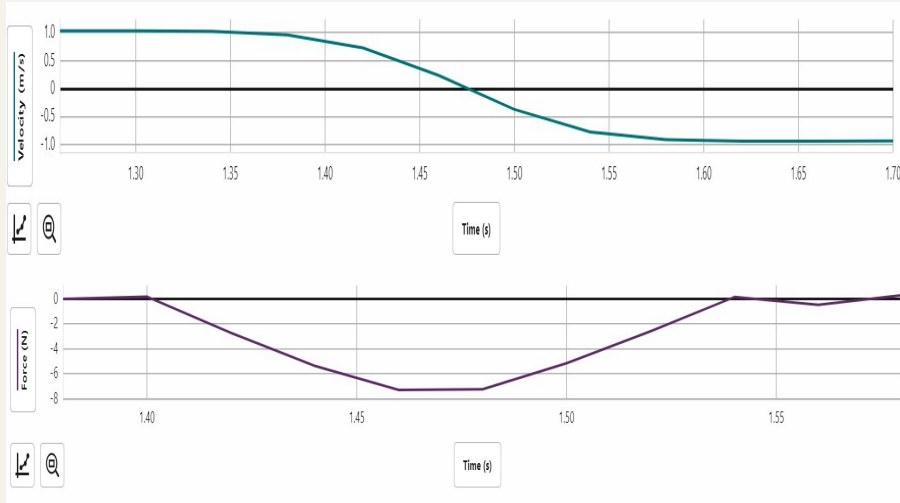
~~Co-operative company~~

Physics Presentation

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Investigation A: Elastic

$m=0.2987 \text{ kg}$

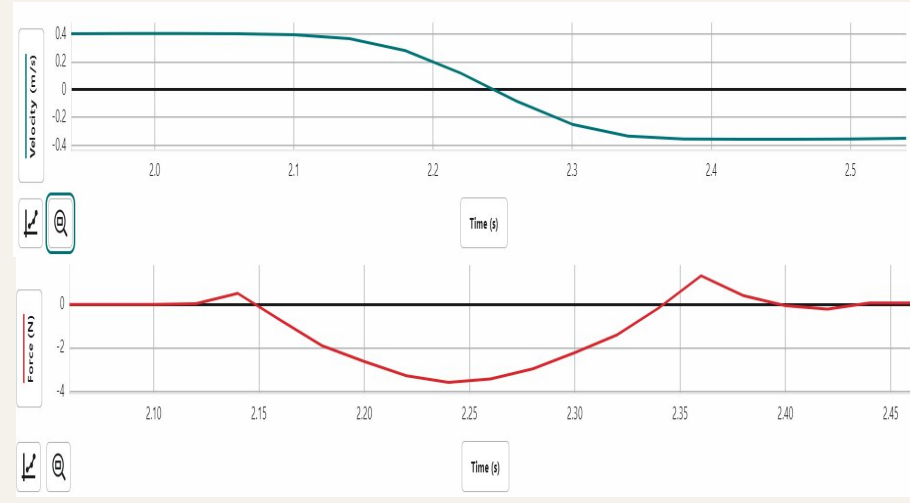


$$I \approx m\Delta v$$

$$-0.296 \approx 0.2897(-0.41 - 0.38)$$

$$-0.296 \approx -0.236$$

$m=0.5481 \text{ kg}$



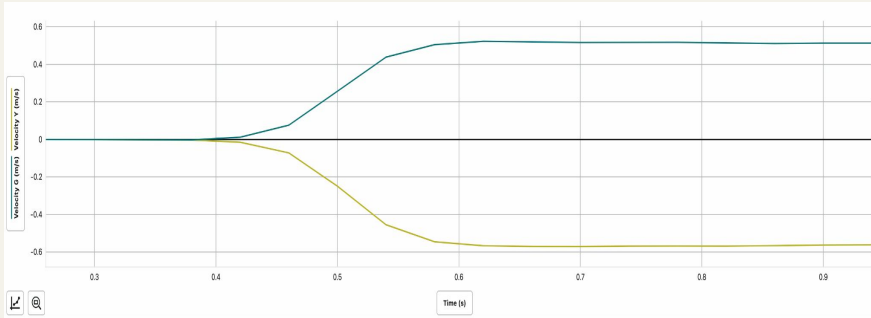
$$I \approx m\Delta v$$

$$-0.439 \approx 0.5481(0.41 - (-0.36))$$

$$0.439 \approx 0.422$$

Investigation F: Hyperelastic

Equal Masses



Initial Momentum: 0

Final Momentum: 0 (velocities in opposite directions cancel)

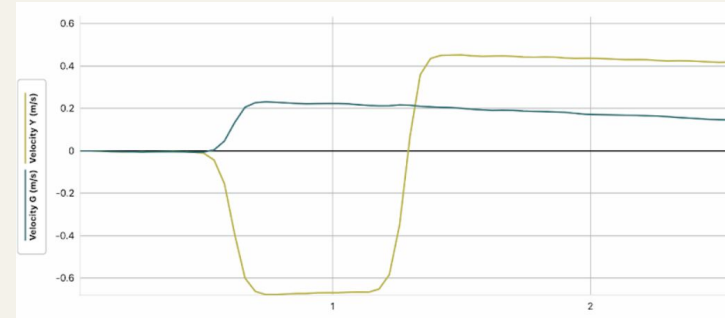
Momentum is still conserved.

Initial Energy: 0

Final Energy: $2 * \frac{1}{2} * mv^2 = 0.081 \text{ J}$

The carts gained kinetic energy because they started moving.

Unequal Masses



Initial Momentum: 0

Final Momentum: 0

After the collision:

- Green cart's velocity: 0.34 m/s
- Yellow cart's velocity: -0.6 m/s

Initial Energy: 0

Final Energy: $\frac{1}{2} m_1 v_1^2 + \frac{1}{2} m_2 v_2^2 = 0.085 \text{ J}$