Experiment 3: Collisions Part 3B– Linear Collisions Between Two Objects

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| --- | --- | --- |
| Name | Partner | Date |
| Sonic Ranger 1 Calibration (Gain and Offset): | Sonic Ranger 2 Calibration (Gain and Offset): |
| Glider colliding with a stationary glider using a spring

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Trial | Mass 1 $m\_{1}$(kg) | Mass 2 $m\_{2}$(kg) | Initial Momentum $p\_{i}$(kg m/s) | Final Momentum $p\_{f}$(kg m/s) | Change in Momentum$$Δp=p\_{f}-p\_{i}$$(kg m/s) |
| 1 |  |  |  |  |  |
| 2 |  |  |  |  |  |
|  |  |  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Trial | Initial Kinetic Energy $K\_{i}$(J) | Final Kinetic Energy $K\_{f}$(J) | Change in Kinetic Energy$$ΔK=K\_{f}-K\_{i}$$(J) |
| 1 |  |  |  |
| 2 |  |  |  |
|  |  |  |  |

 |
| Glider colliding with (and sticking to) a stationary glider using velcro

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Trial | Mass 1 $m\_{1}$(kg) | Mass 2 $m\_{2}$(kg) | Initial Momentum $p\_{i}$(kg m/s) | Final Momentum $p\_{f}$(kg m/s) | Change in Momentum$$Δp=p\_{f}-p\_{i}$$(kg m/s) |
| 1 |  |  |  |  |  |
|  |  |  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Trial | Initial Kinetic Energy $K\_{i}$(J) | Final Kinetic Energy $K\_{f}$(J) | Change in Kinetic Energy$$ΔK=K\_{f}-K\_{i}$$(J) |
| 1 |  |  |  |
|  |  |  |  |

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| --- | --- | --- |
| Name | Partner | Date |
| What was the ratio of the final to initial kinetic energy $(K\_{f} / K\_{i})$?  How did this result compare to the value that is predicted for a completely inelastic collision with a stationary target (as in your prelab question)? |
| Glider colliding with a stationary glider using rubber bumper

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Trial | Mass 1 $m\_{1}$(kg) | Mass 2 $m\_{2}$(kg) | Initial Momentum $p\_{i}$(kg m/s) | Final Momentum $p\_{f}$(kg m/s) | Change in Momentum$$Δp=p\_{f}-p\_{i}$$(kg m/s) |
| 1 |  |  |  |  |  |
|  |  |  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Trial | Initial Kinetic Energy $K\_{i}$(J) | Final Kinetic Energy $K\_{f}$(J) | Change in Kinetic Energy$$ΔK=K\_{f}-K\_{i}$$(J) |
| 1 |  |  |  |
|  |  |  |  |

 |
| Write a paragraph that summarizes your important results |