

A photograph of the Fourier Dynamics System. It shows a black anodized track with a white and yellow scale, two toy cars (one white, one yellow), and a tablet computer on a stand displaying a graph. The setup is on a wooden surface.

Multi-functional Fourier Dynamics System

With Low Friction Design and Multiple Accessories

The Fourier Dynamics System provides the complete solution for the Physics laboratory. It is designed to give educators and students the most suitable equipment to perform hands-on activities in the field of Mechanics. The System is compatible with all Fourier data loggers and may be used independently or in conjunction with Fourier's wide range of Physics-related sensors such as Distance, Force, Photogate and Smart Pulley.

The low friction track allows for accurate and versatile experimentation. The Fourier Dynamics System is ideal for teaching and studying topics such as Kinematics, Dynamics, Newton's Laws, Collisions, Impulse and Momentum, Conservation of Energy and Simple Harmonic Motion.

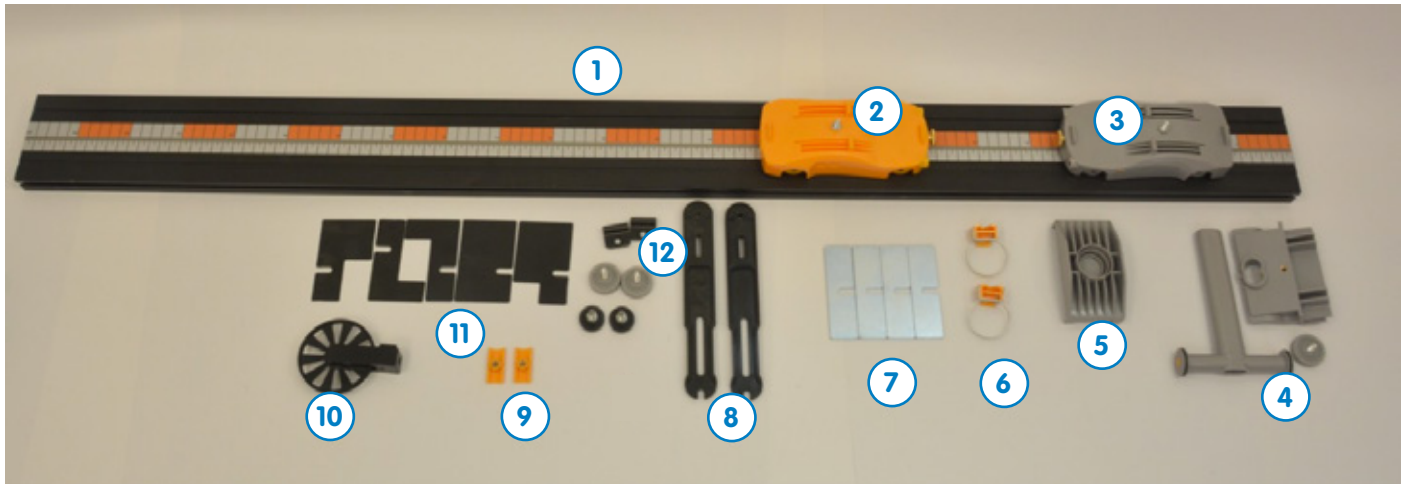
The System includes a low friction black anodized track, two carts, a pulley and many other accessories.

Typical Experiments

The following experiments which make use of the Dynamics System can be found in Fourier Education's Physics Experiment Book:

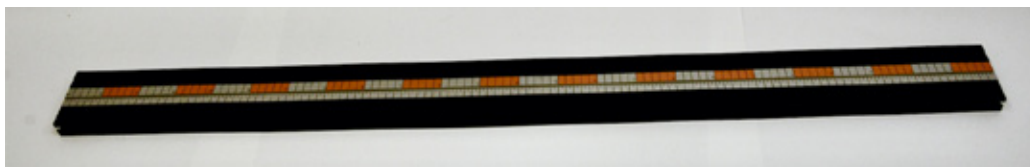
- Velocity
- Motion on an Inclined Plane
- Momentum Conservation in Collisions
- Energy Conservation in Collisions
- The Impact of Constant Force on a Moving Body
- Newton's Second Law
- Impulse and Momentum

Dynamics System Contents



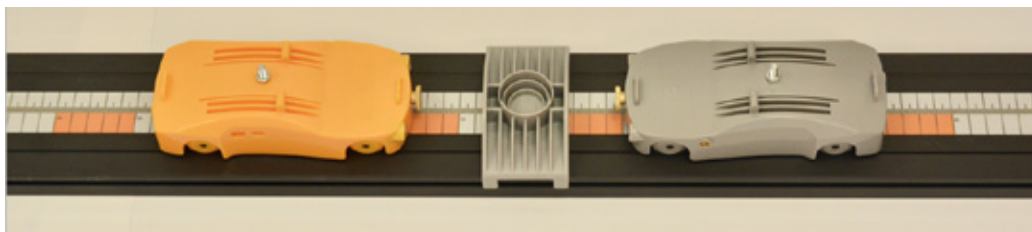
1. 1.2 m track
2. Standard cart (two Neodymium magnets inside cart)
3. Standard cart (two Neodymium magnets inside cart)
4. Single-foot end stop
5. Adjustable end stop
6. Collision ring
7. Additional weight (50g mass X 4)
8. Two brackets for Photogate and Distance sensors
9. Bracket holder
10. Pulley
11. Flag (Light barrier)
12. Flag holder (perpendicular)

Using the Dynamics System



1.2 m Track

The 1.2 m track is a low friction black anodized track. It features a measuring tape for easily measuring displacement along its length. Slots along the sides of the track and down the center allow accessories such as the Photogate brackets, Distance sensor bracket and rod clamp to be easily mounted.



Carts

The Fourier Dynamics System is supplied with two carts - as well as two sets of magnets for these carts.

- Each cart has a mass of 134 grams. Adding weights will change the mass of the cart.
- The magnets are useful in studying elastic collisions. In addition to the Magnets, you can use the collisions rings (see below) as well.



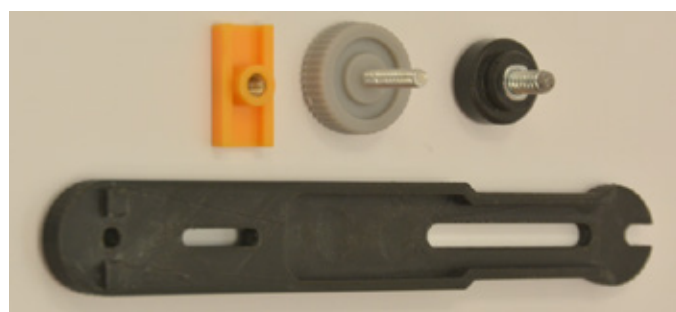
Studying Collisions

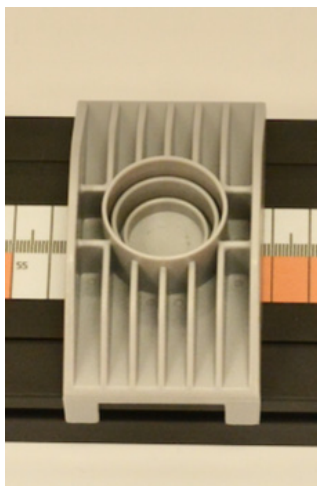
To observe elastic collisions, you can use the magnets with the carts. Because the carts will repel one another, you can arrange a collision in which the carts never actually touch. The collision will be very nearly elastic, unlike a collision in which there is contact between the carts.

Photogate and Distance Sensor Bracket (X2)

The Photogate and Distance sensor bracket can be mounted on the side of the track as follows:

1. Connect the Bracket holder to the gray bolt as shown in the right picture.
2. With the black bolt you can attach either Distance or Photogate sensors to the holder sensor.
3. Mount the Photogate or Distance sensor on the bracket using the knobbed bolt provided.
4. Adjust the Photogate or Distance sensor height as desired.





Adjustable End Stop

The adjustable end stops slides onto the end of the track.

Adjust the position as desired.



Double-foot Stand

The double-foot stand slides onto the end of the track. Slide the nut in the center of the stand into the center slot of the track underside. Secure the stand by tightening the star-knobbed bolt.

Adjust the height as desired using the knob of the stand.

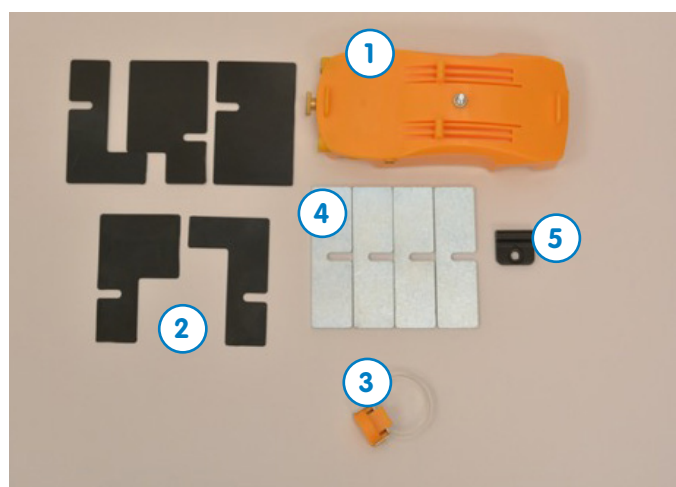
Cart parts

The cart comes with several parts enabling to increase the usability of the system.

Description of parts:

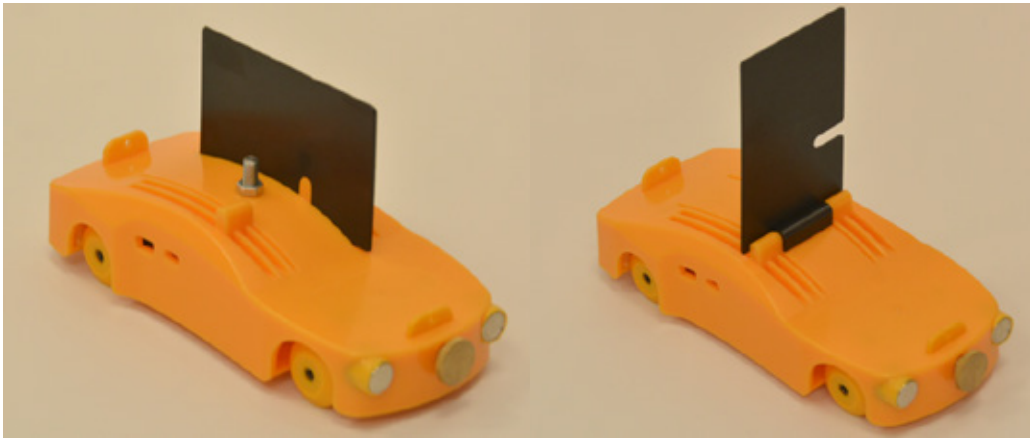
1. Cart – there are two identical carts. The cart comes with pre-installed Neodymium magnets (inside carts).
2. Five different flags shape to be used according to the experiment to be undertaken.
There are two slots along the cart which is used to install the flags in a parallel position to the cart.
3. Collision ring – can be attached to the cart front and be used for elastic collisions.
4. Weight that can be added to the cart (either to one cart or divided between carts).
5. Flag holder to attach the flag in a perpendicular position to the cart.

Pay attention that you can attach the flags either in parallel or perpendicular position to the cart.



Flags

There are few different flags. The flag attached to the cart (in perpendicular position) can serve as targets for the Distance sensor. The flag attached to the cart (in parallel position) can be used with the Photogate sensor.



Mass

The 50 g mass unit is used to increase the mass of the cart. Attach the mass as seen in the below picture.



Technical Support

Please contact Fourier technical support as follows:

Web: <http://einsteinworld.com/contact-form/>

Email: support@einsteinworld.com

Copyright and Warranty

All standard Fourier Systems sensors carry a one-year warranty, which states that for a period of twelve months from the date of delivery, it will be substantially free from significant defects in materials and workmanship.

This Warranty does not cover breakage of the product caused by misuse or abuse.

This Warranty does not cover Fourier Systems consumables such as electrodes, batteries, EKG stickers, cuvettes and storage solutions or buffers.