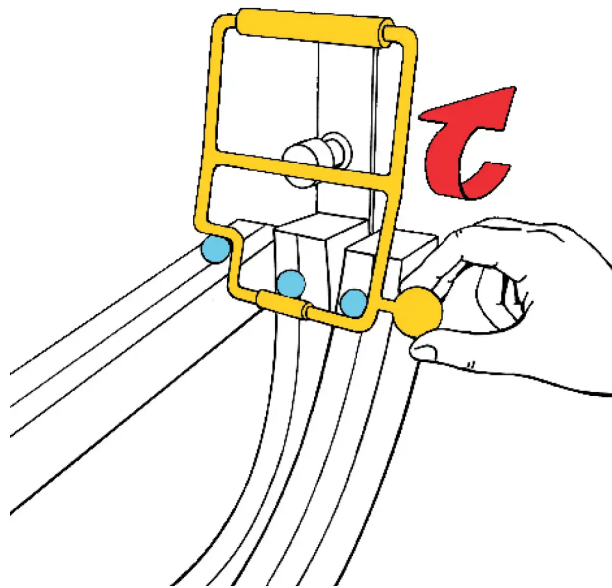


Brachistochrone

Which ball arrives first?



Place the three balls at the starting position of the three tracks.

Open the starting mechanism.

Observe which ball arrives first.

The ball on the bow-shaped curve arrives first, even though the travelled distance is the longest. The ball on the straight track arrives last, even though it is the shortest path.

The curved path is a special curve – the so-called brachistochrone. It describes the "shortest" path in time between two points.

The final speed is the same for all three routes. The average speed is higher on the brachistochrone. The ball is first accelerated and then decelerated accordingly.

The brachistochrone can be constructed as a cycloid. A cycloid is the movement of a point (e.g. the valve of a bicycle tyre) when a circle (e.g. a bicycle tyre) rolls on a guide curve (e.g. a straight road).