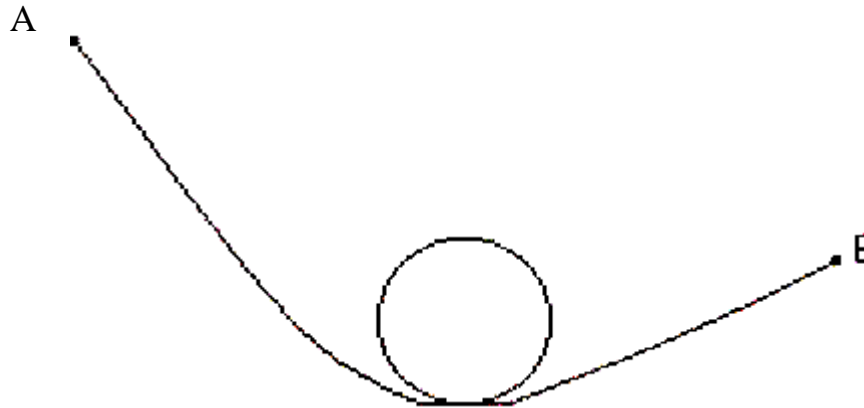


## Work-Energy: Loop the Loop

Go to the Physics Exploration Center. Enter through the resource room 311/312 Thaw Hall.



Play with the loop the loop demonstration which involves a ball and a track that looks like a roller coaster. Point A is on the high side of the track and point B is on the low side.

(a) Predict the minimum height from which the ball should be released on side A to be able to reach the end of the track on side B. What was the reasoning used for your prediction? Now release the ball from that height to verify your prediction.

(b) What is the minimum height from which the ball should be released so as to complete a loop without losing contact with the track? If the loss of mechanical energy can be ignored, can the ball be released from side B from exactly the same height as the height of the loop (Hint: What would it mean about the speed of the ball at the highest point of the loop and what will it mean for the centripetal acceleration necessary for making the ball go in a circle?)?

(c) What are the possible sources of loss of total mechanical energy?

(d) Describe an interesting feature of this demonstration.

(e) Describe four other situations from your every day experience where mechanical energy is approximately conserved because work done by the non-conservative forces is ignorable. Don't forget to mention which non-conservative force is doing negligible work in each case you cite.