AstroBlaster

Demonstrates:

- Elastic collisions
- Supernova shock waves

Contents:

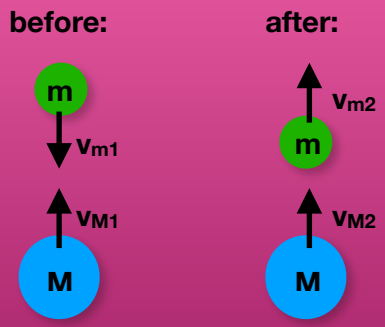
- Stack of four balls on post
- Two extra red balls
- Safety goggles

How it Works

Drop the stack of balls straight down on a hard surface (the floor is best), and the top ball will bounce up to five times the height of the original drop.

Elastic Collisions

Conservation of kinetic energy and linear momentum can be seen from analyzing the collisions among the individual balls. For example, consider the collision between the blue and green balls. Think of the blue ball hitting the ground first and then bouncing upward with the same speed. The less massive green ball is still moving downward when the blue ball starts upward, so they collide.



Supernova Shock Waves

The gravitational collapse through a star's layers is represented by dropping the stack of balls. The resulting shock wave is represented by each ball moving faster than the one below it. The top ball escapes with the highest speed, similarly to the outermost layers of a star being ejected in the supernova.