Notes from the class on Dec 3, 2017

Continue practicing the problems related to the Newton's laws.

The problems discussed in the class:

1. What is the actual meaning of the 1st law? Why do we need this law? Can we just conceder the 1st law as a special case of the 2nd law? The Newton's laws work only in the inertial systems. The 1st law is a definition of the inertial frame system. It contains procedure of how to identify the inertial systems.

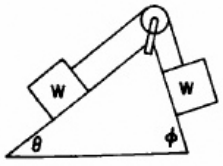
2. Can we define the object properties (Force, Mass) from the 2nd law? What additional physical concept do we need in order to make the 2nd law actually "work"? How to resolve the chicken-and-egg problem rooted in the 2nd law? A concept of the field of forces (or simply field) answers these questions.

3. When two metal balls collide, the mutual forces acting upon the balls are equal (according to the 3rd law). So the forces cancel each other. Why the balls move apart after collision? Because the forces are applied to different objects.

Homework

The problem is from the Feynman's Lectures on Physics. This is a difficult problem. It involves 2 studied topics: the 2nd Newton's low and the motion with a constant acceleration.

4-10. In the figure, the weights are equal, and there is no friction. If the system is released from rest, how fast are the weights moving when they have gone a distance D?



Read R. Feynman's books about his life and his achievements!