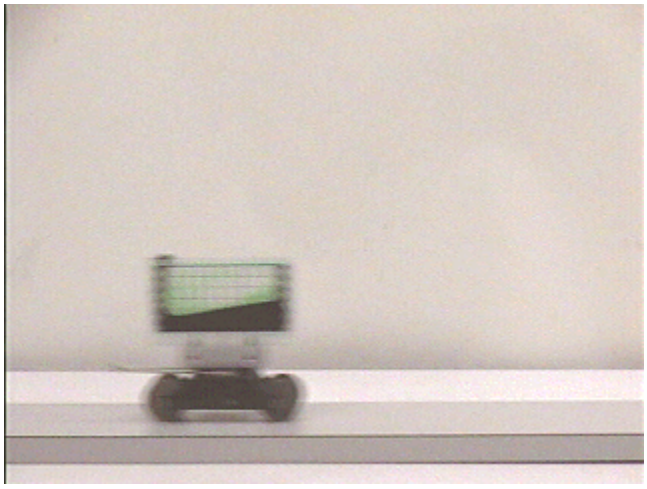
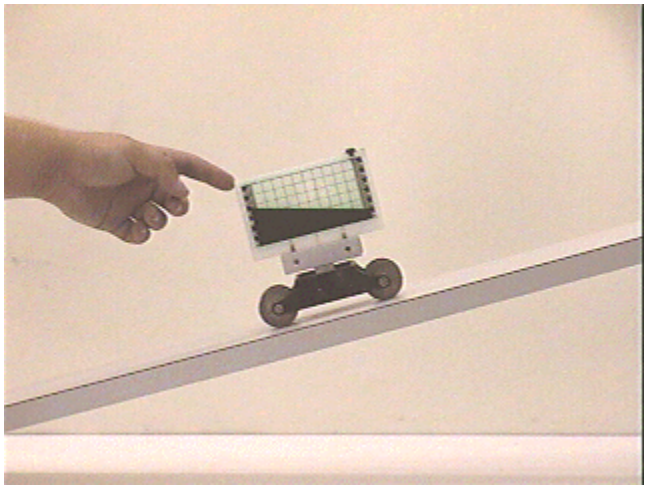
Question #49

A liquid accelerometer is constructed with a thin container of water (green for ease of visibility) that can be moved either forward or backward along a line through the length of the container. If this accelerometer is placed on a level platform the water in the accelerometer will be horizontal. When the accelerometer is accelerated toward the left by a mass hanging over a pulley, as shown in the photograph below, the inertia of the water will cause it to move to the rear of the accelerometer, as seen in an mpeg video by clicking your mouse on the photograph.



Now suppose that the accelerometer is held at rest on an incline, as shown in the photograph below. Due to gravity, the water will collect toward the front of the accelerometer.



The question this week involves how the water will distribute itself when the accelerometer is released and begins to accelerate down the incline. Will the water collect more in the front end, as in the still photograph, will it collect in the back end, as in the case of acceleration along a horizontal surface shown above, or will the water do something in between, like having its surface parallel to the incline?

When the accelerometer is released the water will:

- (a) gather toward the front of the accelerometer.

- (b) gather toward the rear of the accelerometer.
- (c) become uniformly distributed in the accelerometer with its surface parallel to the incline.

Click here for Answer #49 after January 29, 2001.

Question of the Week

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For questions and comments regarding the *Question of the Week* contact Dr. Richard E. Berg by e-mail or using phone number or regular mail address given on the Lecture-Demonstration Home Page.