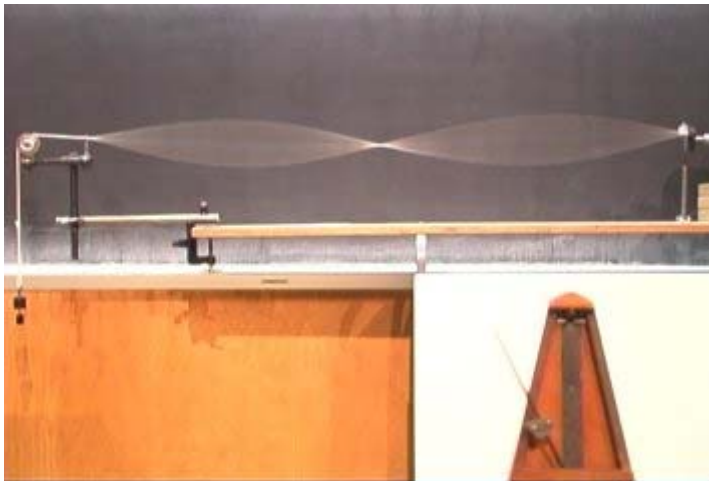
Question #264

This is a follow-up question to Questions #262 and # 263.

The rope wave generator in the photograph below consists of a rope attached at one end to a vibrator with the other end running over a pulley with 250 grams of weight attached. When the vibrator is activated, a two loop standing wave is produced, as shown in an mpeg video by clicking your mouse on the photograph.



If the waves go by too fast, click here to see the video at a slower speed. Note that there are four wave vibrations for each tick of the metronome.

If the frequency is changed, we can make a standing wave with 1, 3 or 4 loops. For this question you are to determine the factor by which the original frequency must be multiplied in order to create a wave with a single loop in the standing wave, leaving the same all other factors, such as the tension in the rope.

By what factor must the frequency be changed in order to create a single loop standing wave in the rope?

- (a) 1/4.
- (b) 1/2.
- (c) 3/2.
- (d) 2.
- (e) 3.
- (f) 4.
- (g) other.

Click here for Answer #264 after November 20, 2006.

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.