

Läsåret 07/08

SG1108 Tillämpad fysik, mekanik, 7,5 hp

Projekt: Filmat tornfall med modell av tornet

A film director must limit the cost when shooting a film.

In the film a tower shall fall and he wants to use a model of the real tower with all lengths reduced to 1:10 (so the height of the model tower is one tenth of the height of real tower).

1. Does he need to change the film speed (the number of frames per second) so the film will show to the spectators the tower to fall during the same time as the real tower? And if that change of film speed is needed, how shall the speed be changed?

Assume the tower to be a rigid body (model) which means that it will neither bend, nor break. If a digital video camera is used, a sequence of shots (frames) will be taken in a way compared to the sequence celluloid film frames.

Hint: Dimension analysis. Which quantities may be relevant for the time to fall.

2. A real tower is not a rigid body. It will bend and mostly break.

The tower can be compared to a chimney made by bricks.



Describe qualitatively why the chimney bends and why it happens in the way shown in the figure. You may use some formulas but you do not need to derive them completely.