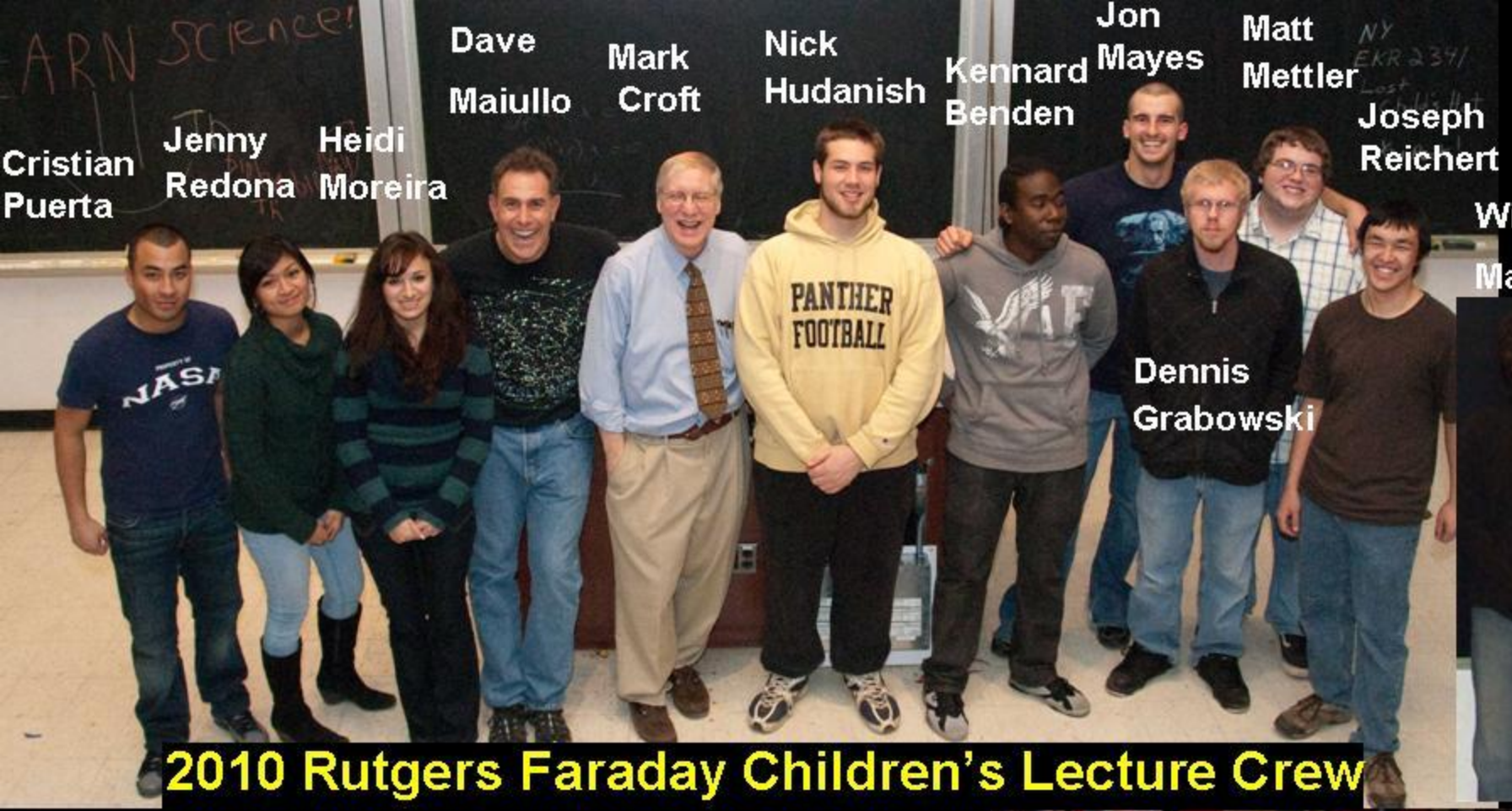
Note bending of light coming from above vs. below water surface.

Density-buoyancy.

Bowling balls – which floats and why?

Before lecture demos.



2010 Rutgers Faraday Children's Lecture Crew

After the show

Pictures courtesy of Carl Blesch

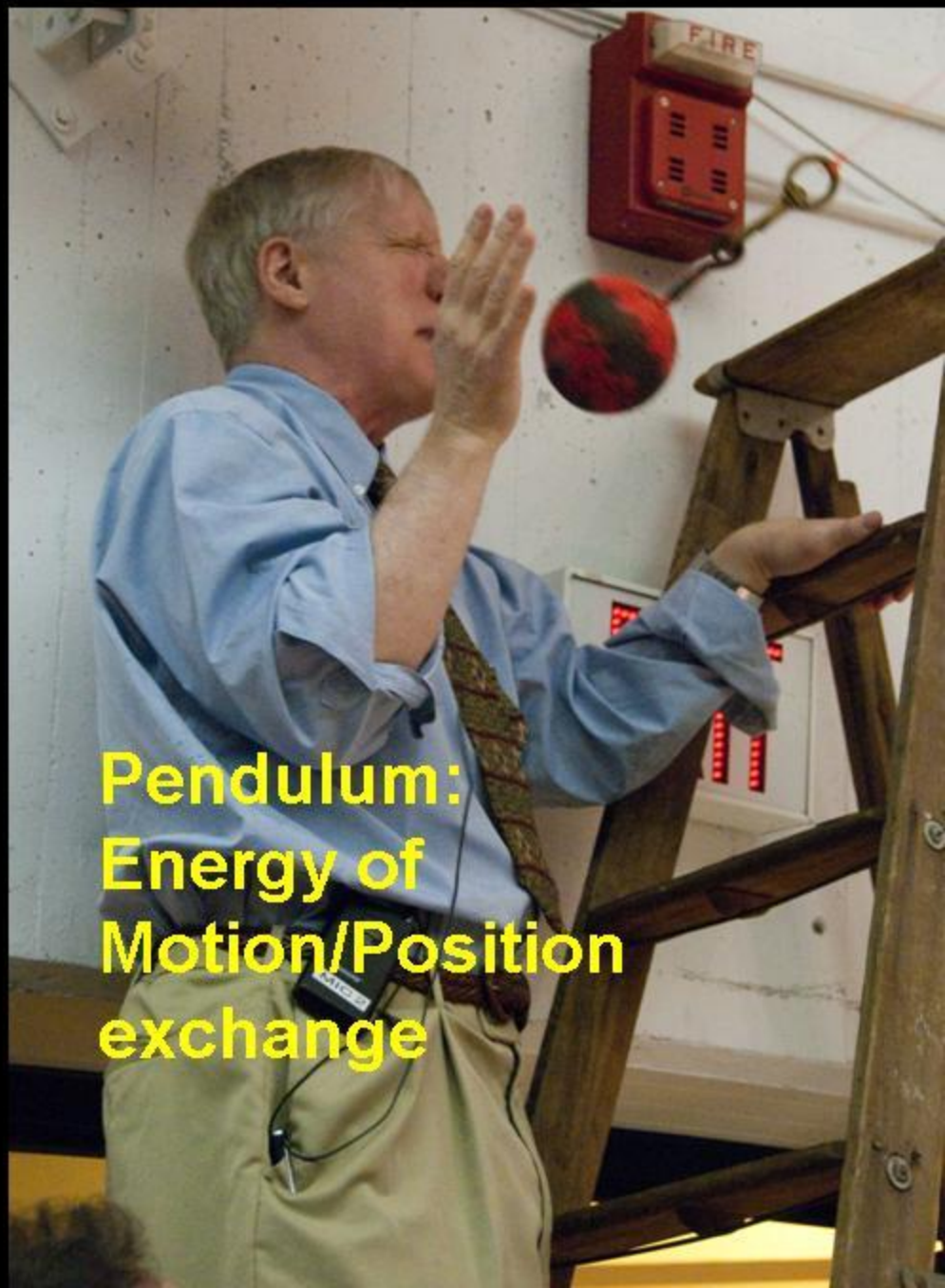
Inertia: Object in motion stays in motion

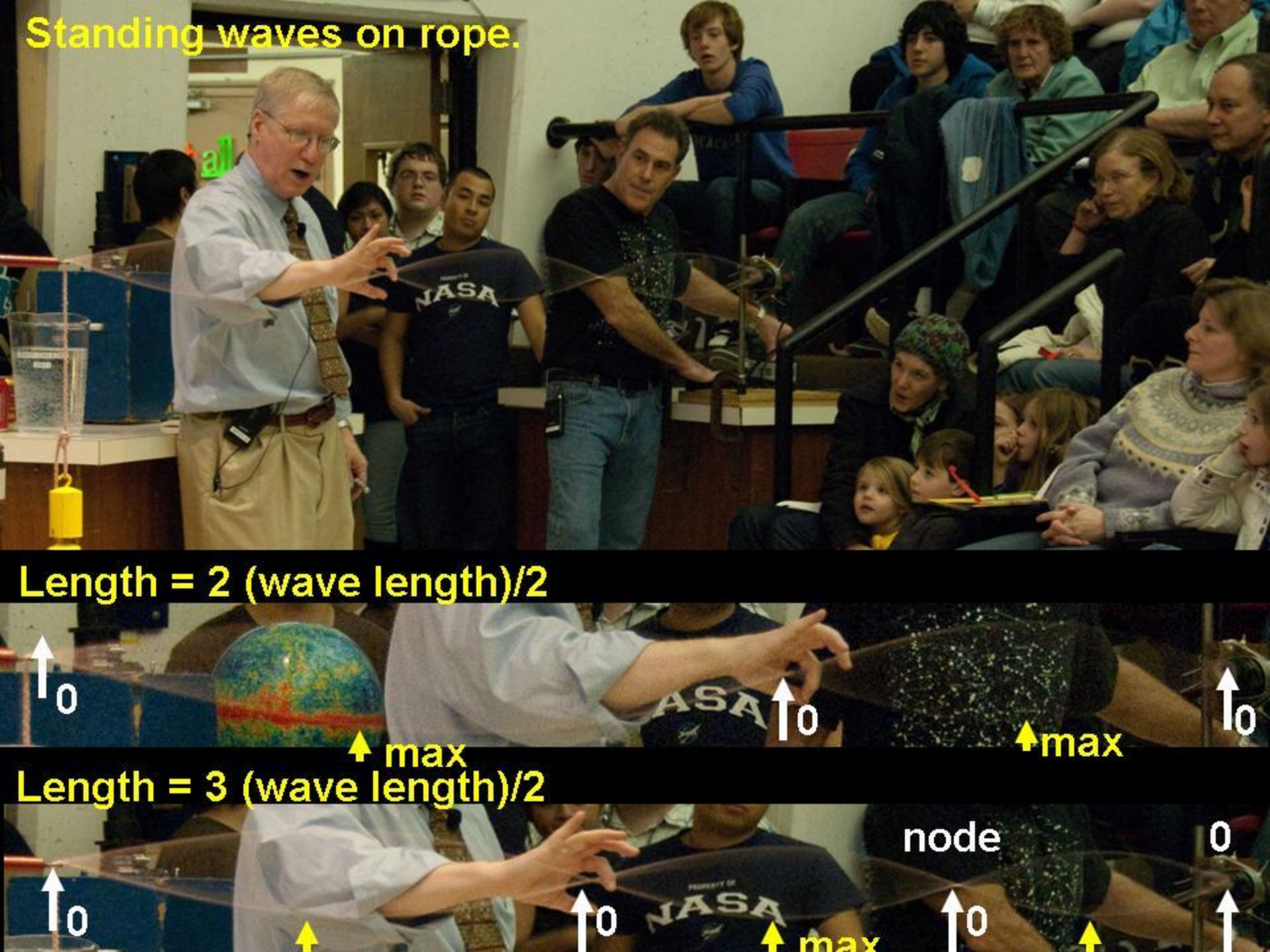
Force reaction force.

How to stop is the problem.

Centripetal force

It won't crush my nose – I think.

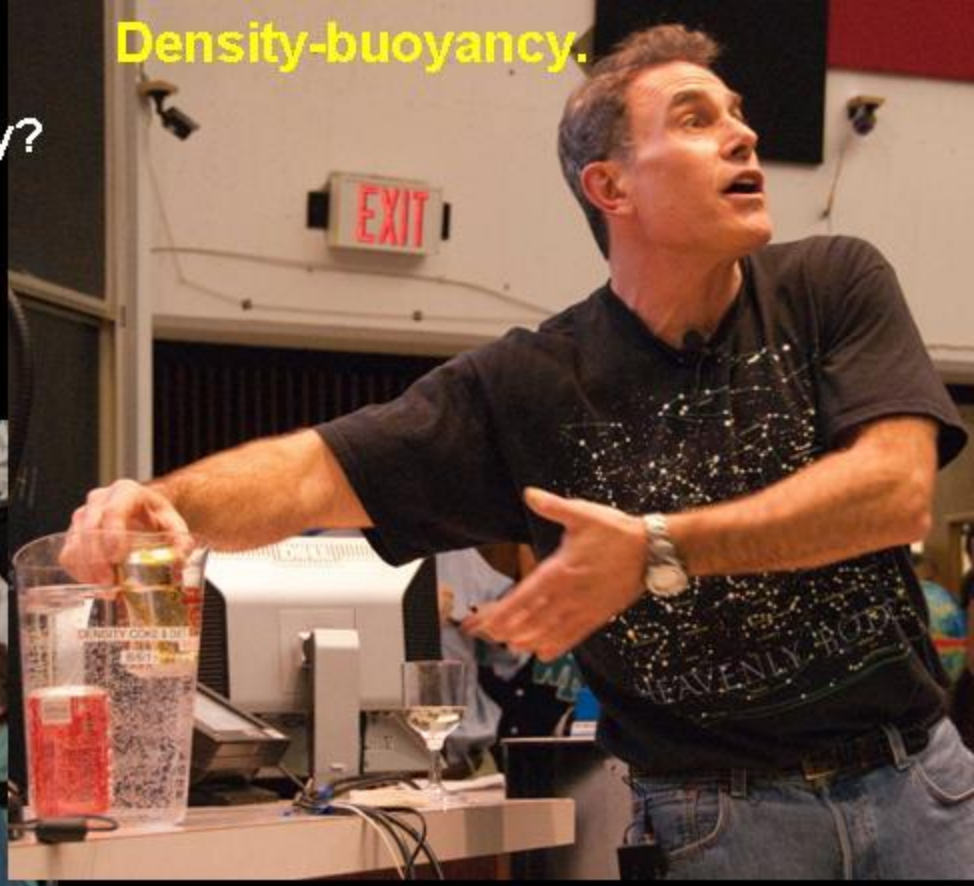



Standing waves on rope.
Length = 2 (wave length)/2
0
max
0
max
0
Length = 3 (wave length)/2
0
0
max
node
0
0

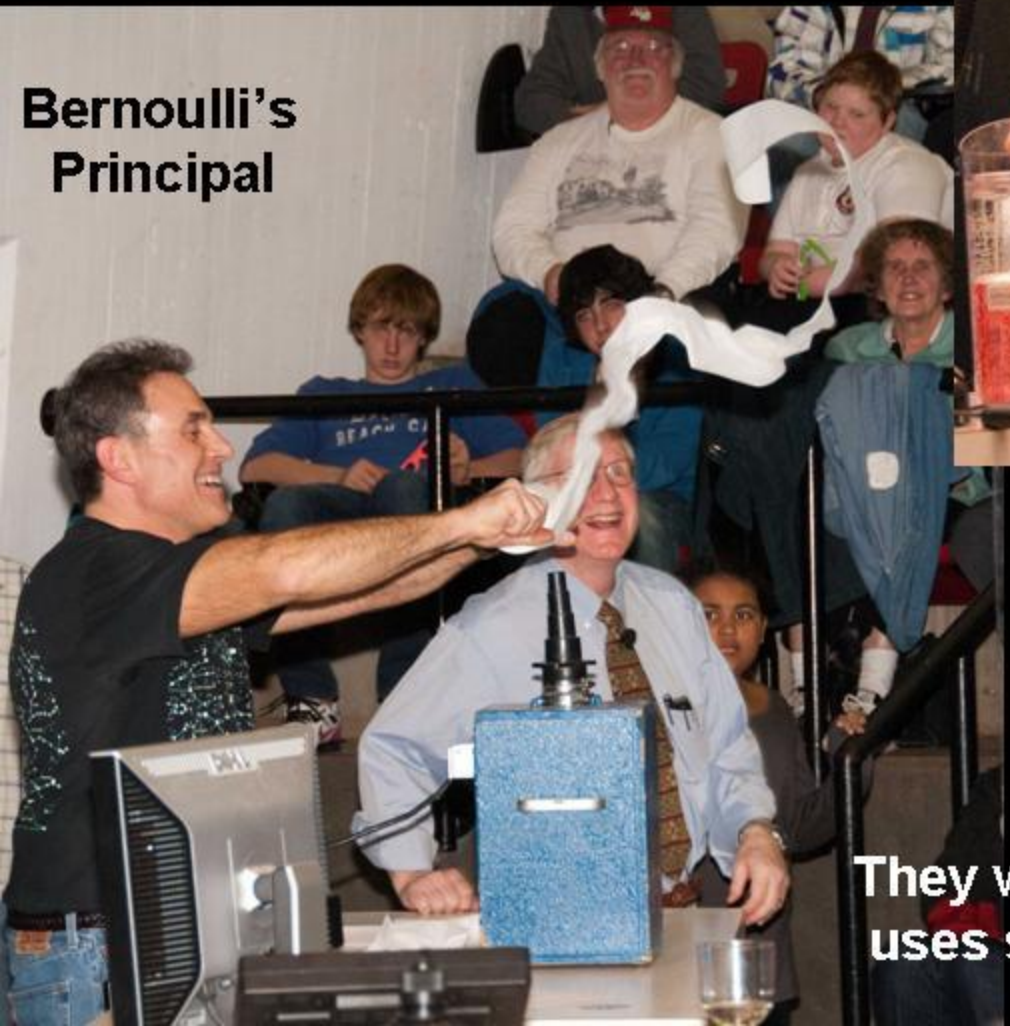
Flame tube
standing waves.

Classic/Diet Coke – which floats and why?

Density-buoyancy.



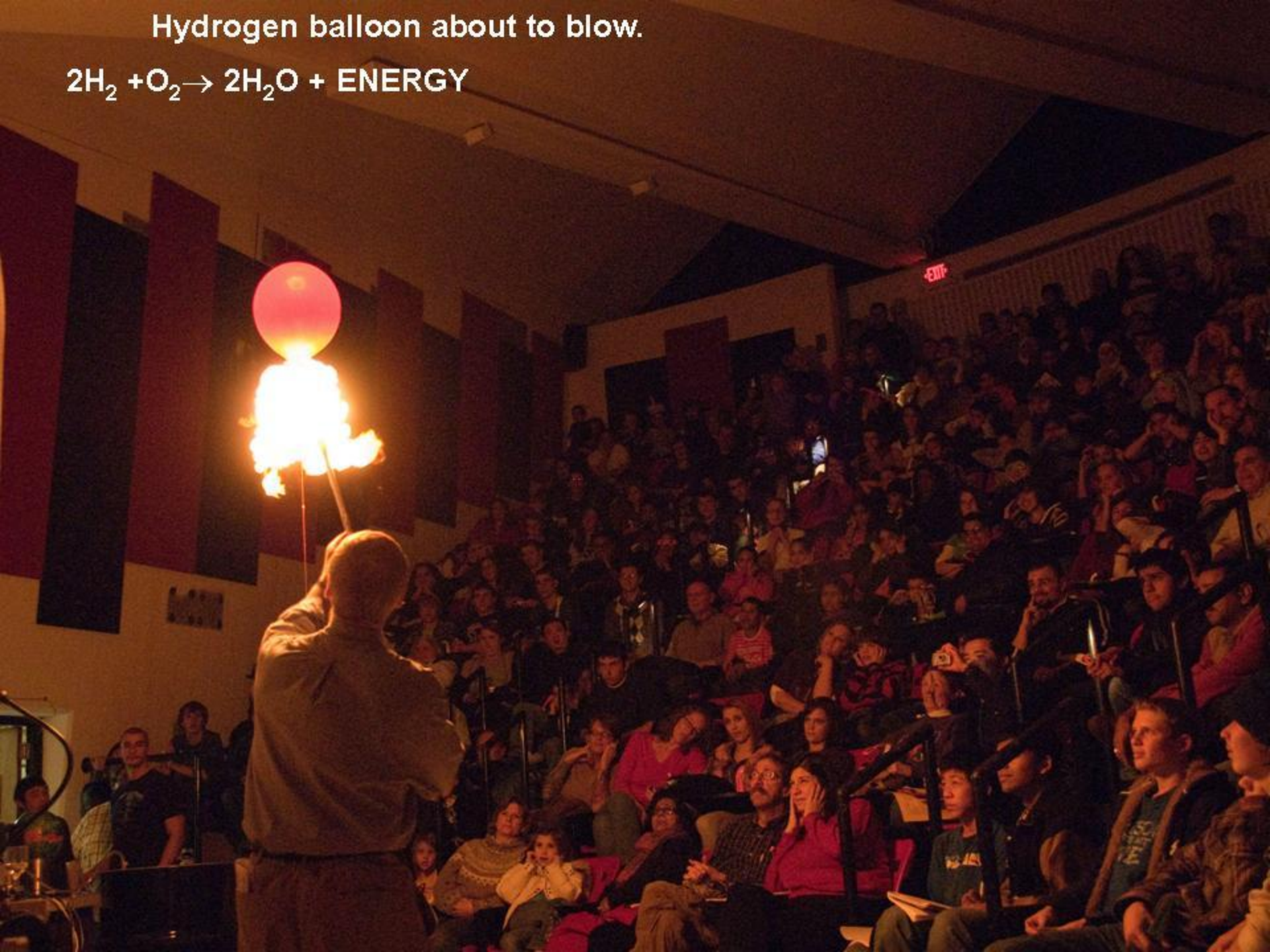
Bernoulli's Principal



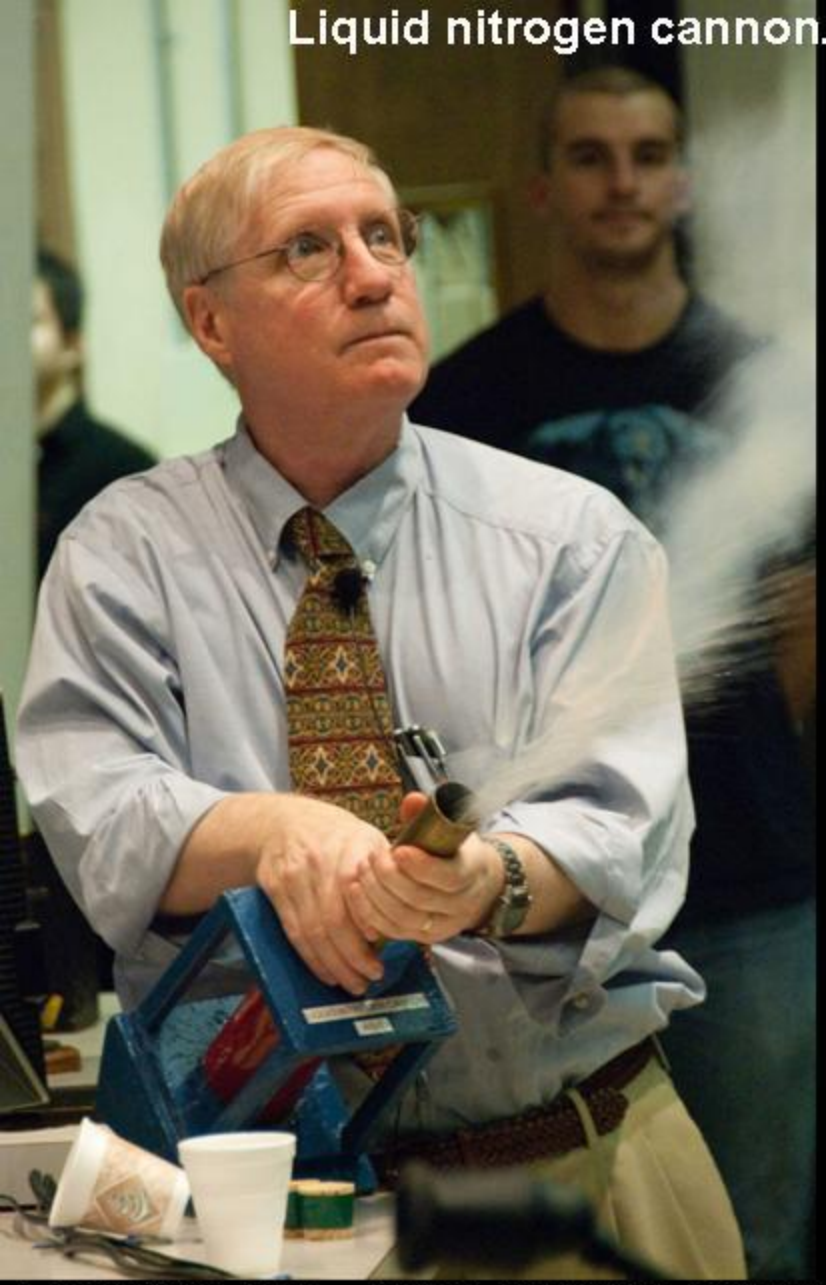
They wonder why the Physics Dept. uses so much toilet paper.

Hydrogen balloon about to blow.

$2H_2 + O_2 \rightarrow 2H_2O + \text{ENERGY}$



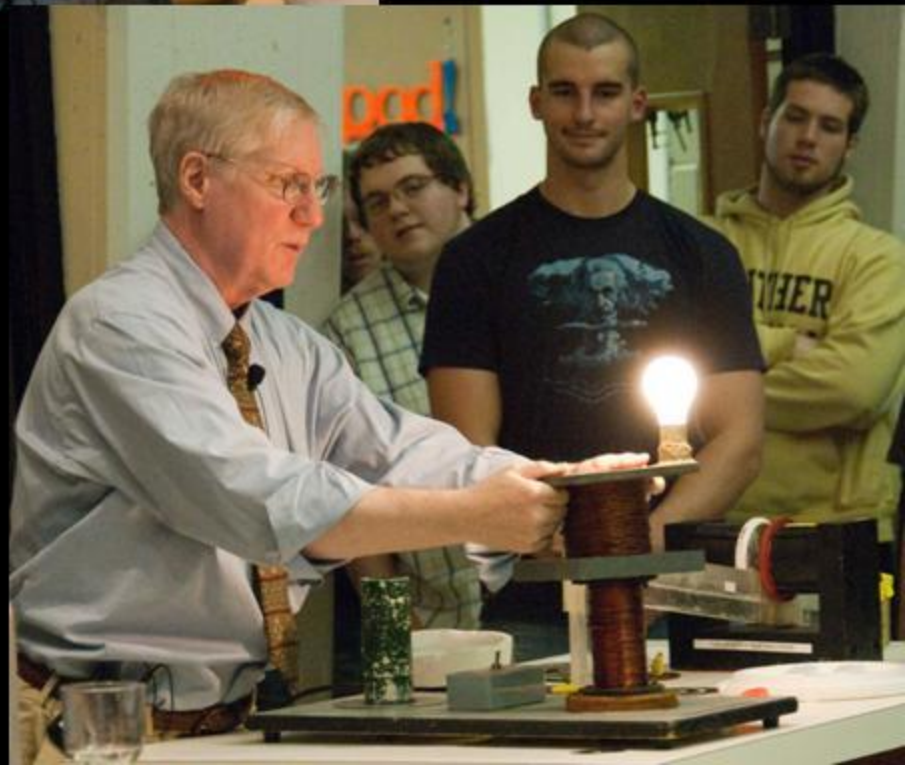
Liquid nitrogen cannon.



Liquid to gas – large volume expansion
- pressure buildup blows cork.

Liquid nitrogen:
brittle flowers .

Induced current.



Audience observes light spectra with diffraction grating glasses. (light separated by wavelength)

What they saw.

ROY G BIV

Red Orange Yellow Green Blue Indigo Violet

Continuous “black body spectrum” from incandescent light bulb

hot wire

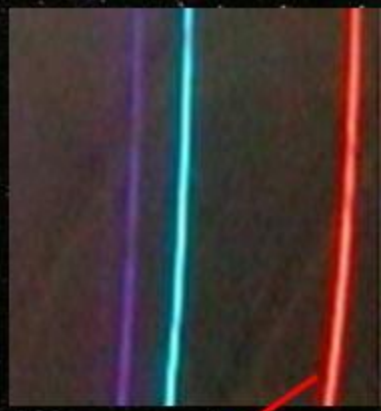
hydrogen fluorescent light

Quantum energy levels of H

cool red star

Orion constellation & spectra

Betelgeuse (T~3,200 K)



hot blue stars

Belt

Orion Sword

Orion emission Nebula (red Balmer line)

Rigel (T~11,000 K)

Sirius

Bed of nails.

Prof. (or baloney) sandwich.

Dave's favorite demo?

Force per nail discussion.

Why Prof. doesn't pop.