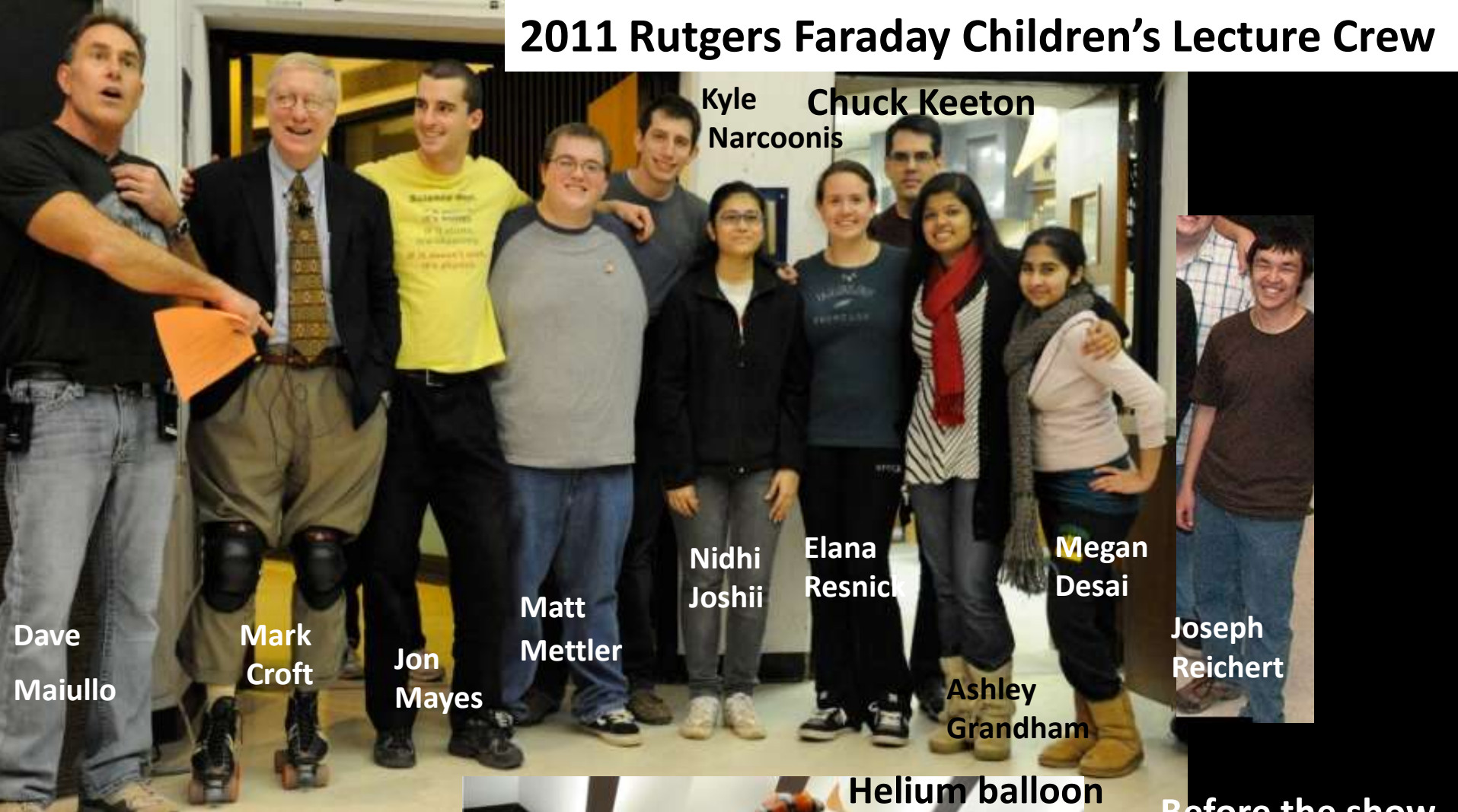


2011 Rutgers Faraday Children's Lecture Crew



All pictures provided
courtesy of
Steven Sinski

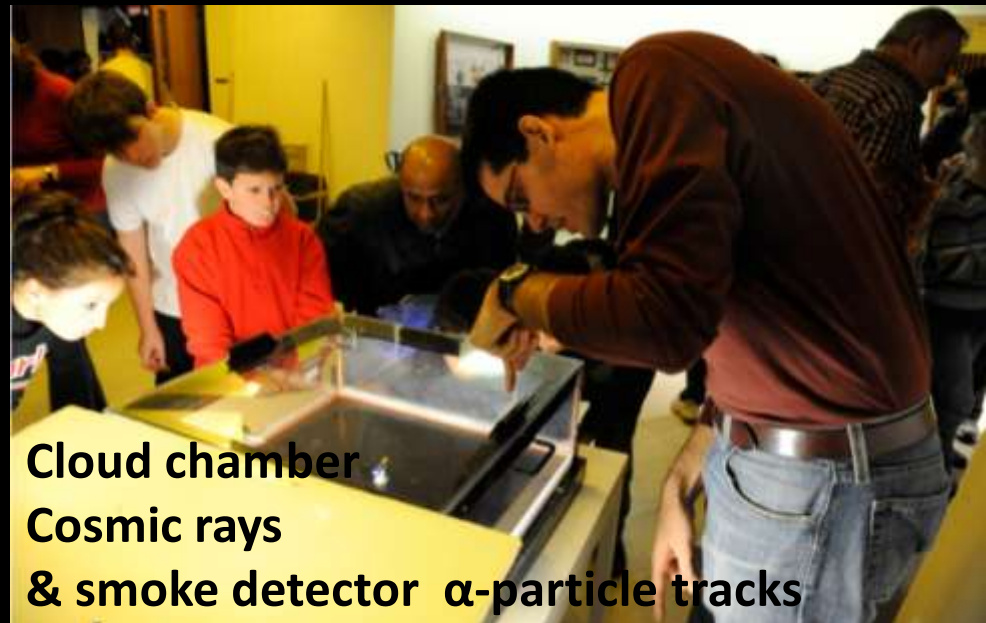


Before the show

Jacob's ladder demo



chaos demos

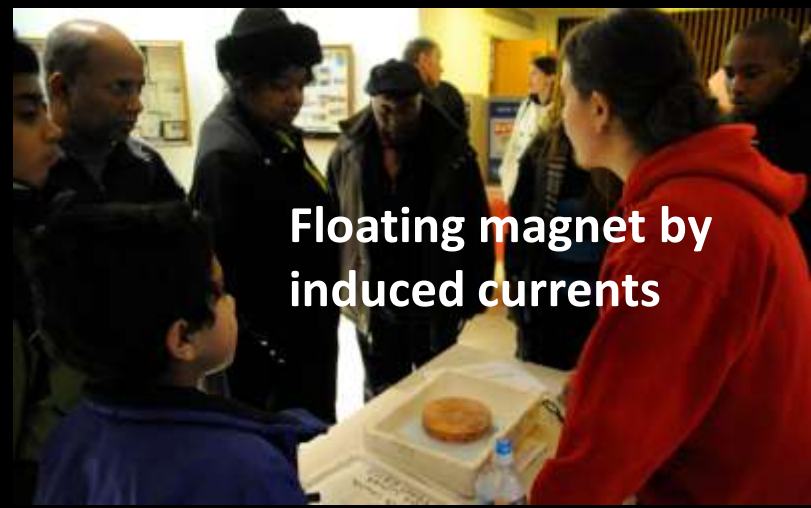


**Cloud chamber
Cosmic rays
& smoke detector α -particle tracks**



**Buoyancy-
density**

Before the show



**Floating magnet by
induced currents**



**Inertia
objects at rest
stay at rest.**



Force reaction force or momentum conservation.

**large acceleration
string breaks**



**Pendulum:
energy
conservation**



singing rods

singing glasses

Chinese bowl



**Flame tube
standing waves.**

**breaking glass
with sound**



Standing waves on rope.

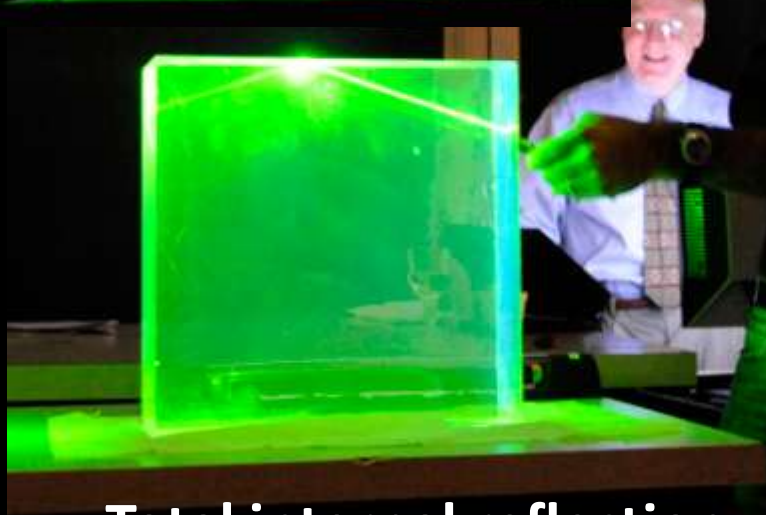
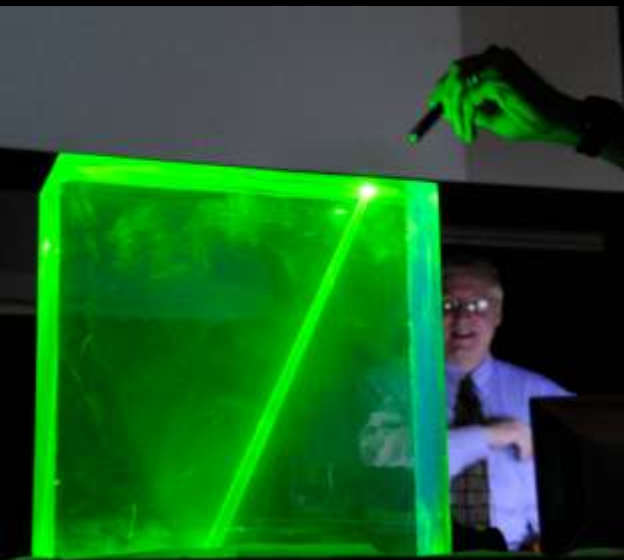




**Propagating
vortex loop.**



refraction of green laser light.



**Total internal reflection
of green laser light.**

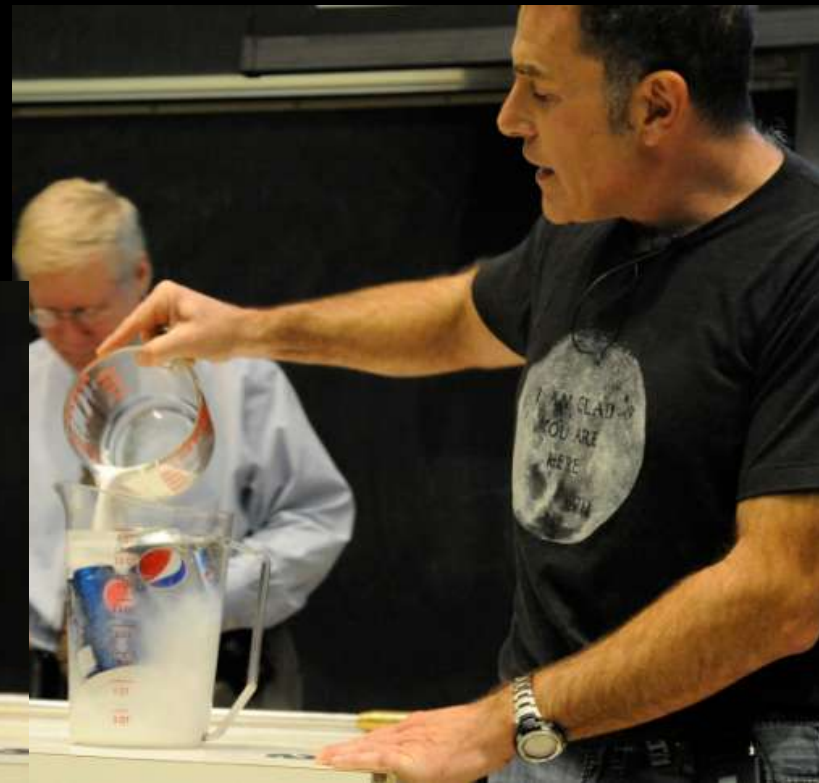


**Violet laser
patterning on
glow-in-the-dark
toilet seat.**



Drum – pump air out and atmospheric pressure crushes it.

**Classic/Diet Coke – which floats and why?
Add salt both float.**





What they saw.

ROY G BIV

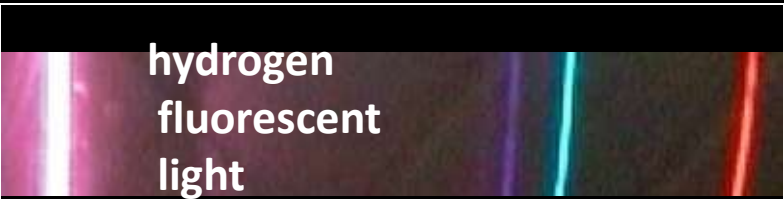
Red Orange Yellow Green Blue Indigo Violet

**Continuous “black body spectrum”
from incandescent light bulb**



hot wire

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



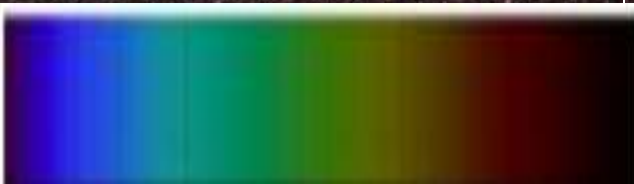
Quantum energy levels of H



cool red star

Orion constellation & spectra

Betelgeuse ($T \sim 3,200$ K)



hot blue stars

Belt

Orion

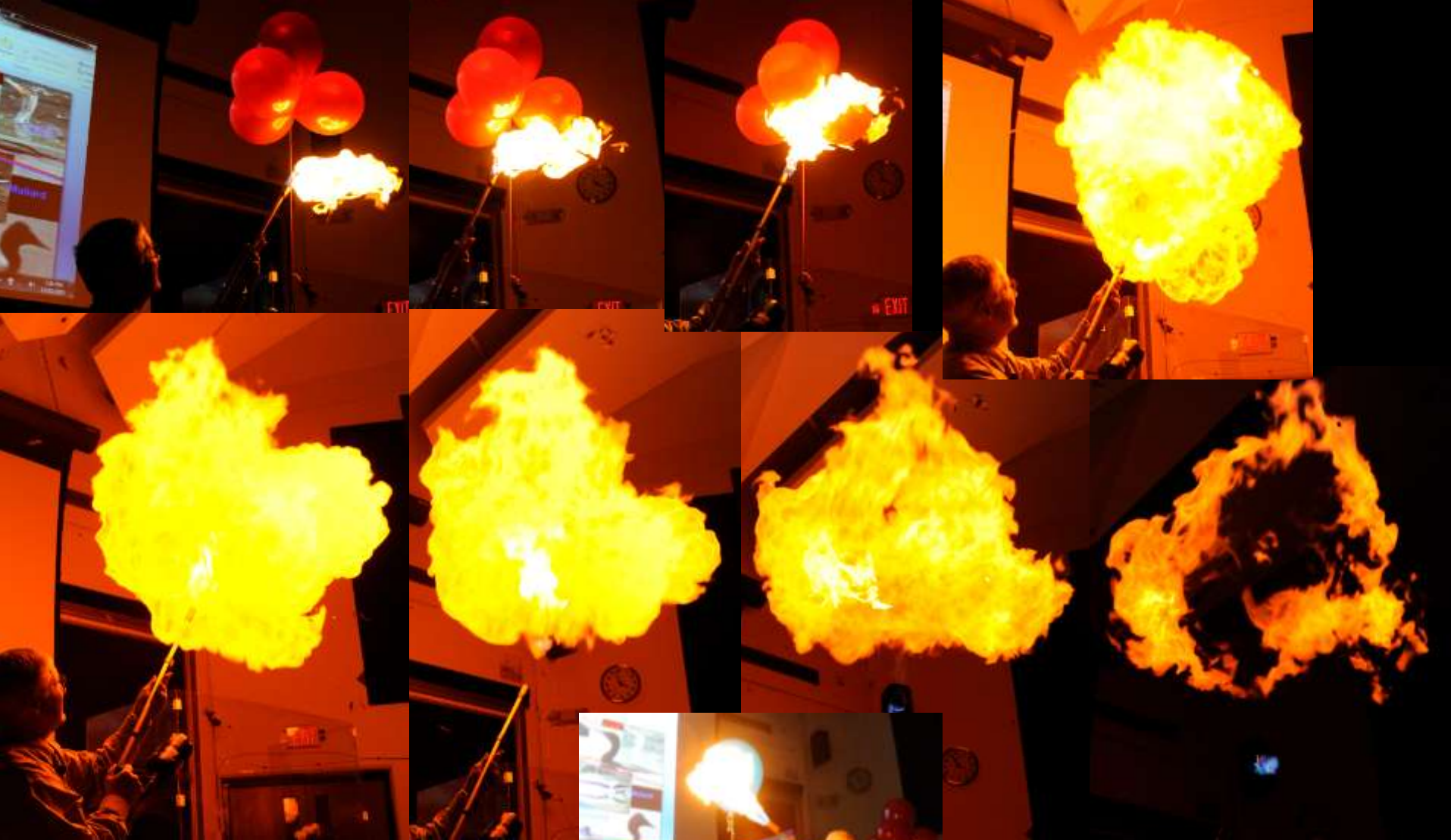
Sword

**Orion emission
Nebula
(red Balmer line)**

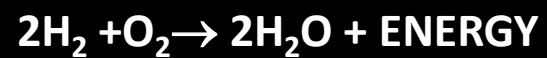
← Sirius

Rigel ($T \sim 11,000$ K)





Hydrogen balloons



Bernoulli's Principal



Floating
Bernoulli
Ball



Why the physics department
uses so much toilet paper.





**Liquid nitrogen:
brittle banana .**

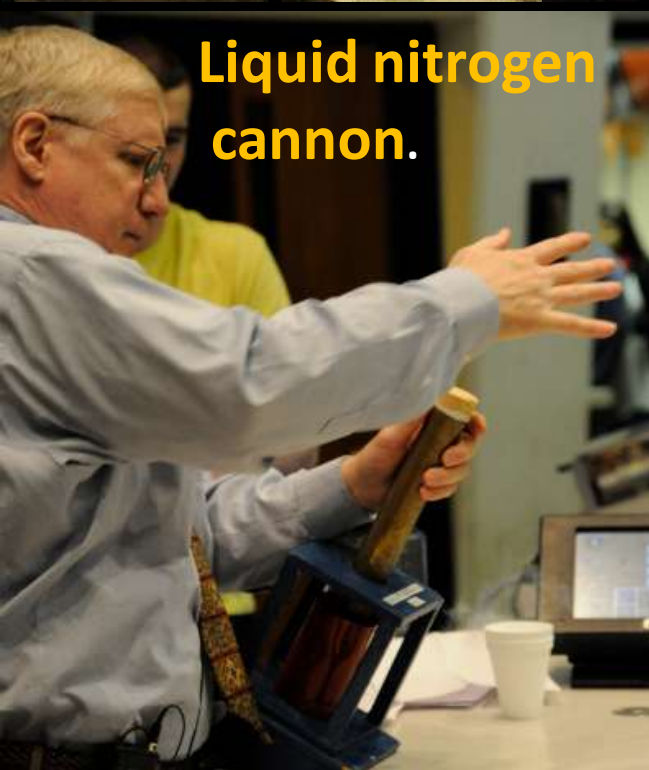


**Liquid nitrogen:
brittle flowers .**





**Liquid N₂ shrinks
helium balloon.**



**Liquid nitrogen
cannon.**





**Liquid nitrogen
cannon.**





Pickle light.



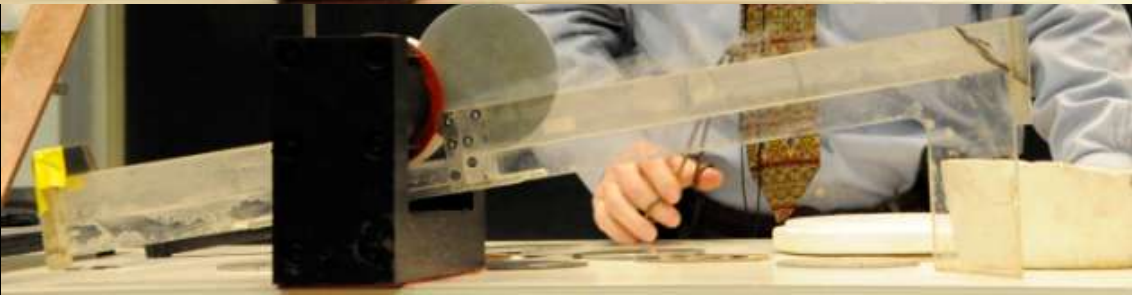
**Magnetic field deflects electron beam
to the side.**



Eddy currents induced in aluminum disk when it hits the magnetic field.



Motional energy of disk is converted into the energy of the electrical current in the disk. So the disk slows down almost to a stop!



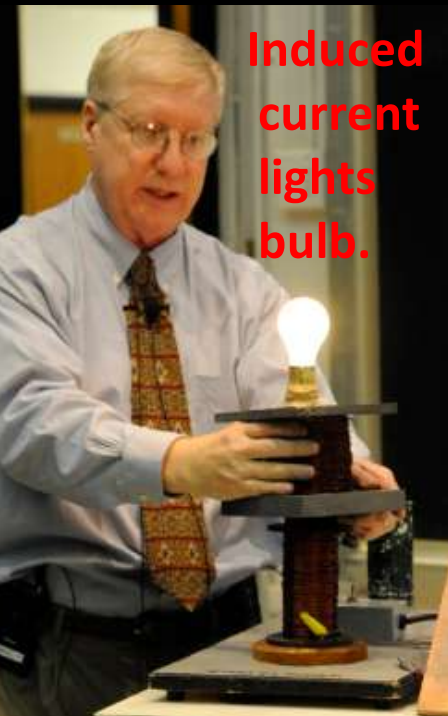


**Eddy currents induced
in aluminum disk when it
hits the magnetic field.**



Ring flinger.

Alternating current
in the coil creates
magnetic field that
flips 120 times a sec.
inducing current in
disk.



Induced
current
lights
bulb.



Disk jumps out of
changing magnetic
field region.

Bed of nails.

Evan
Keeton



Dave's favorite –
breaking brick on
a Professor on
nail bed.

Prof. Chuck Keeton
in nail bed
sandwich.



Chuck Keeton



Force per nail demo.
Why professor doesn't
pop.