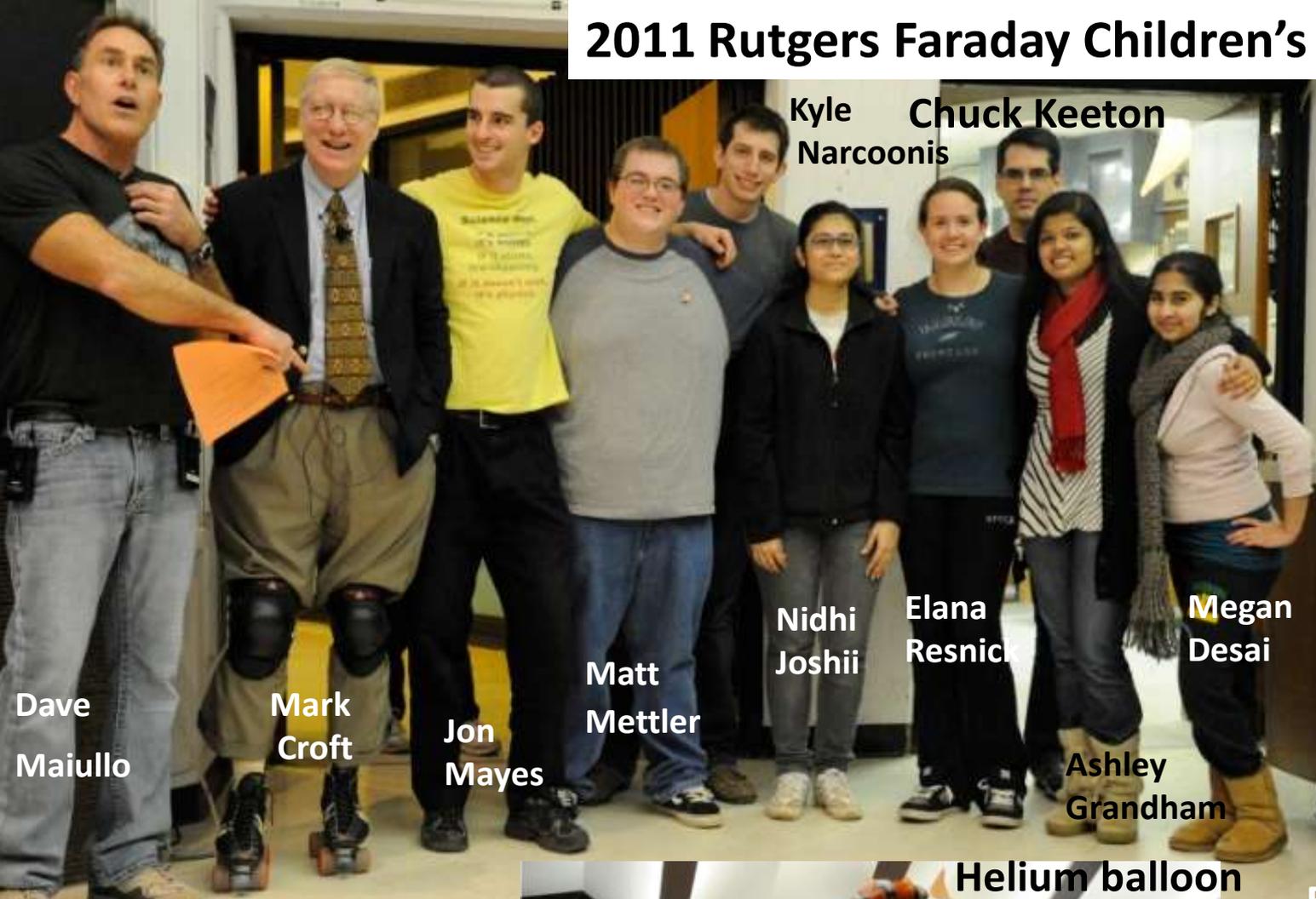


2011 Rutgers Faraday Children's Lecture Crew



Kyle Narcoonis Chuck Keeton

Dave Maiullo

Mark Croft

Jon Mayes

Matt Mettler

Nidhi Joshii

Elana Resnick

Ashley Grandham

Megan Desai

Joseph Reichert



All pictures provided courtesy of Steven Sinski



Helium balloon fish drone



Jacob's ladder demo

Before the show

chaos demos



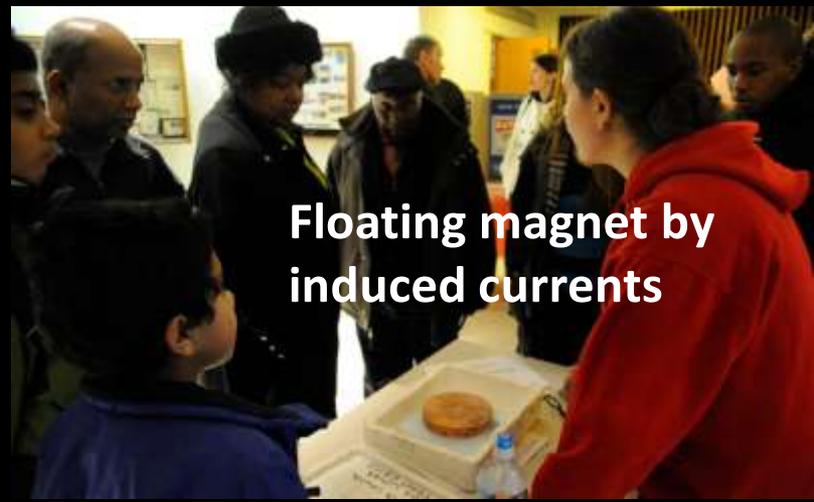
**Cloud chamber
Cosmic rays
& smoke detector α -particle tracks**



**Buoyancy-
density**



**Floating magnet by
induced currents**



Before the show



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



Force reaction force or momentum conservation.

**large acceleration
string breaks**



**Pendulum:
energy
conservation**



singing glasses



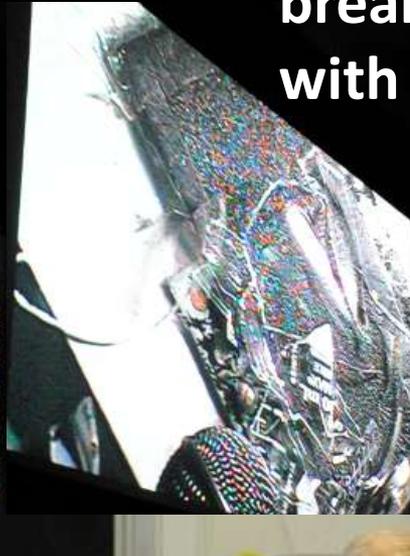
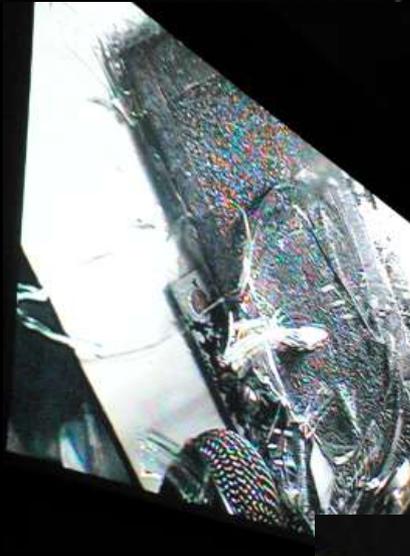
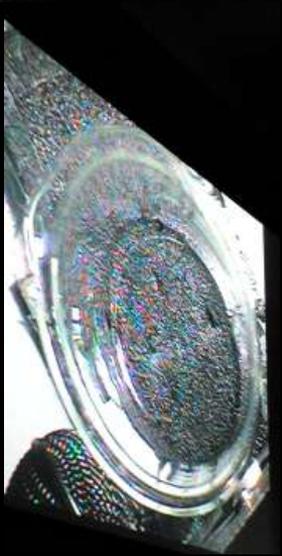
Chinese bowl

singing rods



**Flame tube
standing waves.**

**breaking glass
with sound**



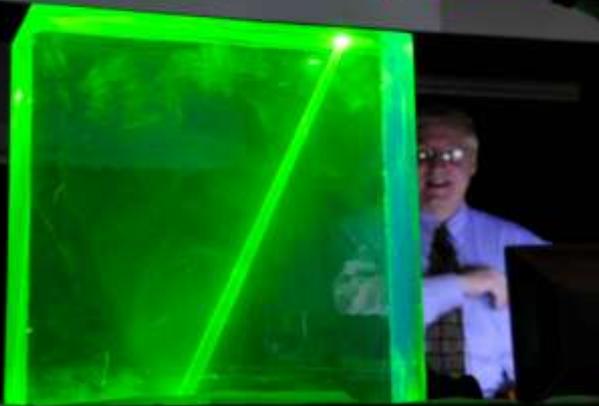
Standing waves on rope.





**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.**



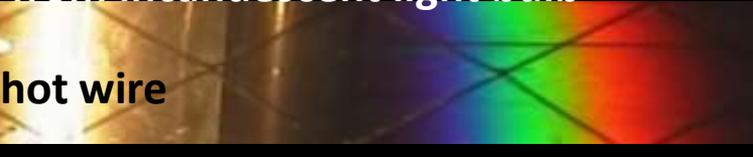


What they saw.

ROY G BIV

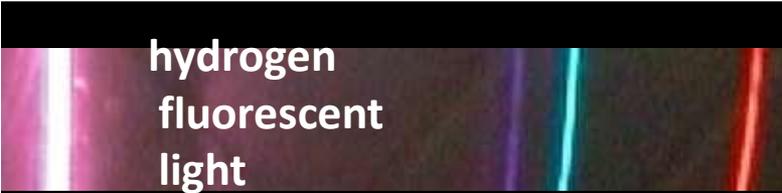
Red Orange Yellow Green Blue Indigo Violet

**Continuous "black body spectrum"
from incandescent light bulb**



hot wire

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



**hydrogen
fluorescent
light**

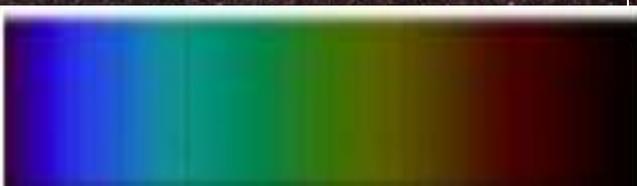
Quantum energy levels of H



cool red star

Orion constellation & spectra

Betelgeuse (T~3,200 K)



hot blue stars

Belt

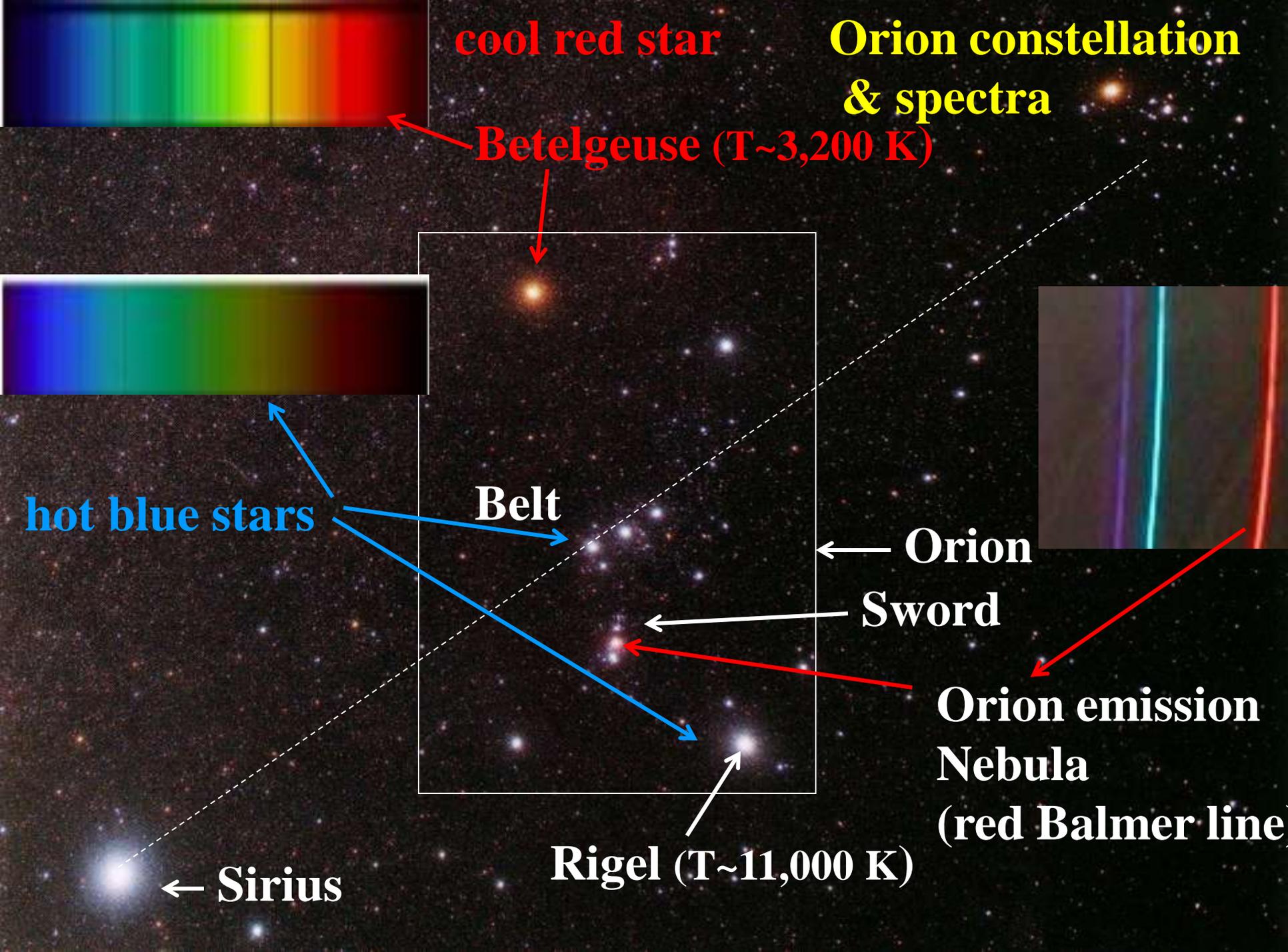
Orion

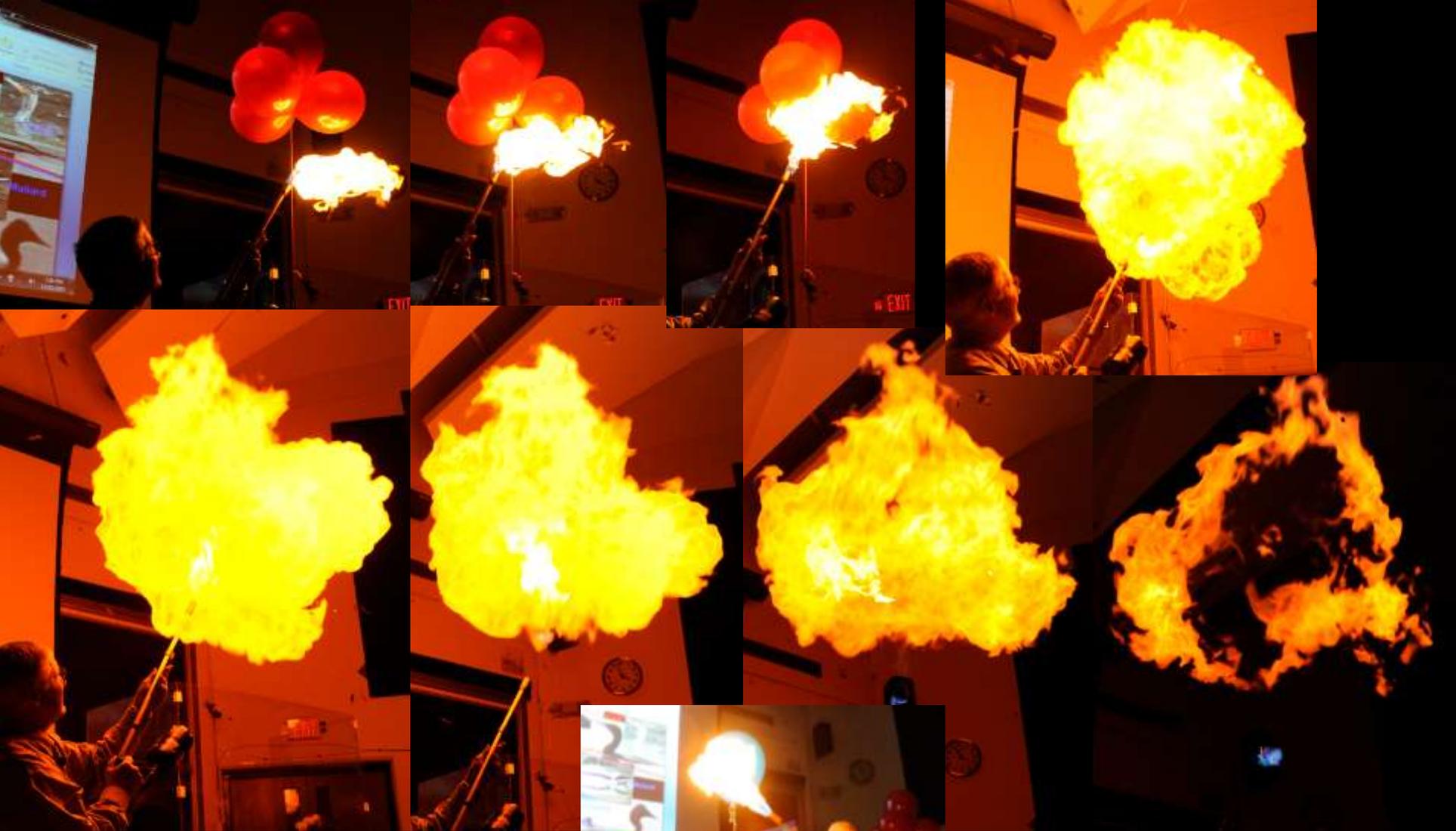
Sword

Orion emission Nebula (red Balmer line)

← Sirius

Rigel (T~11,000 K)



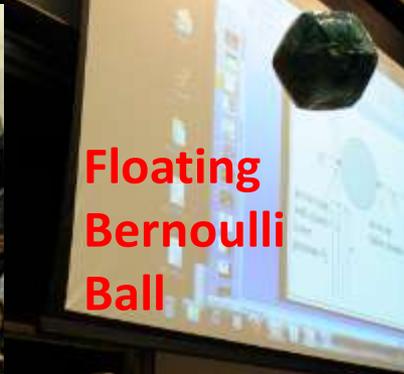


Hydrogen balloons

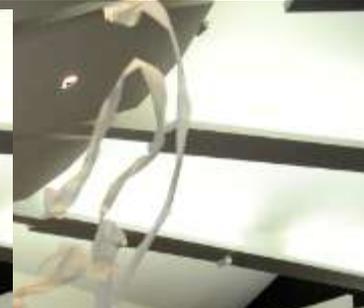




Floating
Bernoulli
Ball



Bernoulli's
Principal



Why the physics department
uses so much toilet paper.





**Liquid nitrogen:
brittle banana .**

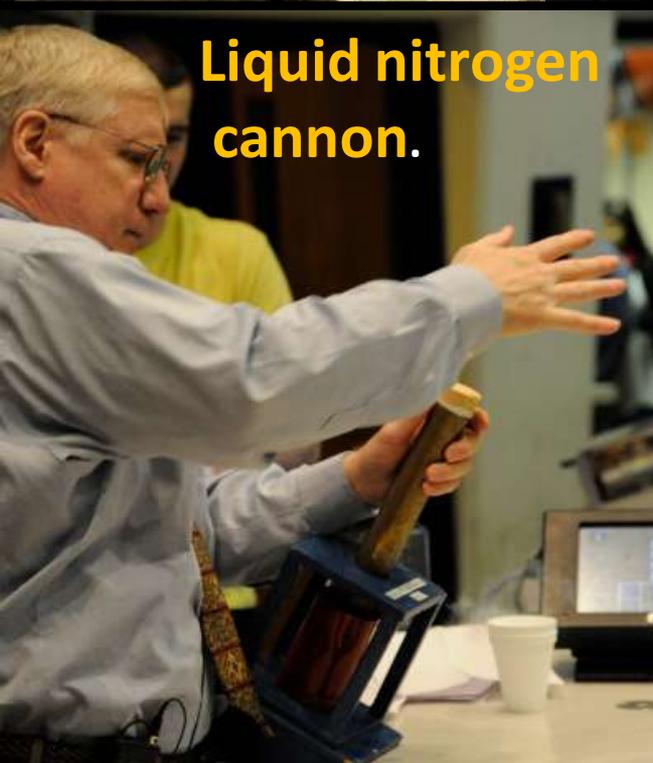


**Liquid nitrogen:
brittle flowers .**





Liquid N₂ shrinks helium balloon.



Liquid nitrogen cannon.



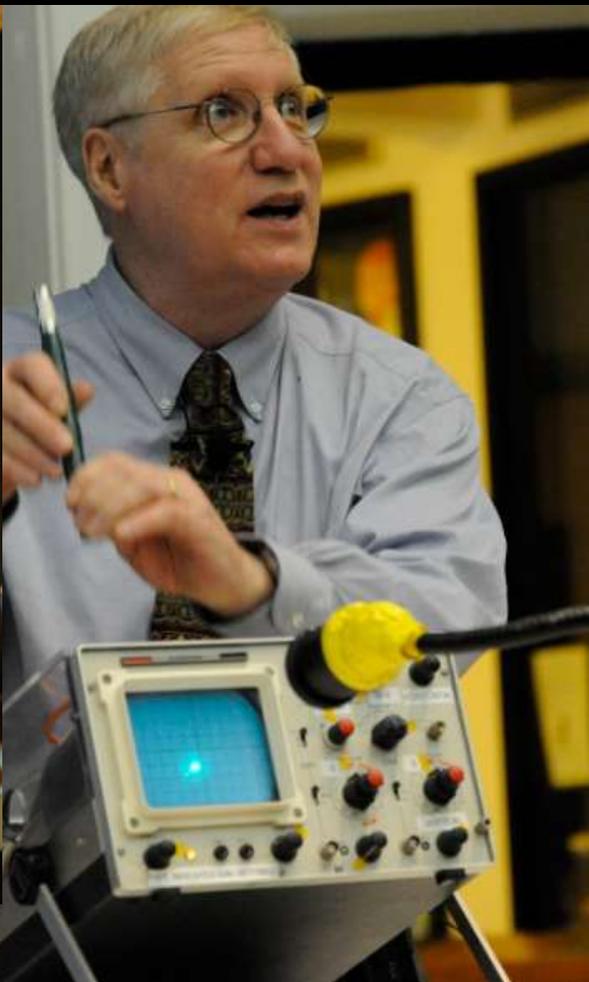


**Liquid nitrogen
cannon.**





Pickle light.



Magnetic field deflects electron beam to the side.





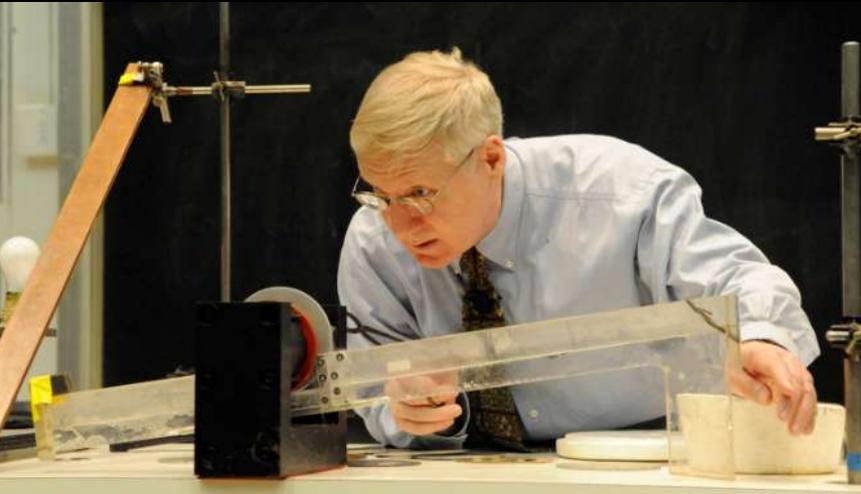
Eddy currents induced in aluminum disk when it hits the magnetic field.



Motional energy of disk is converted into the energy of the electrical current in the disk.



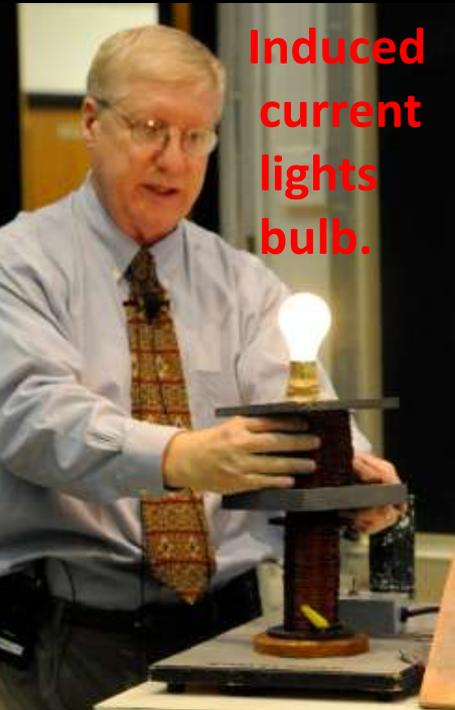
So the disk slows down almost to a stop!



**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



Chuck Keeton



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

Prof. Chuck Keeton
in nail bed
sandwich.





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