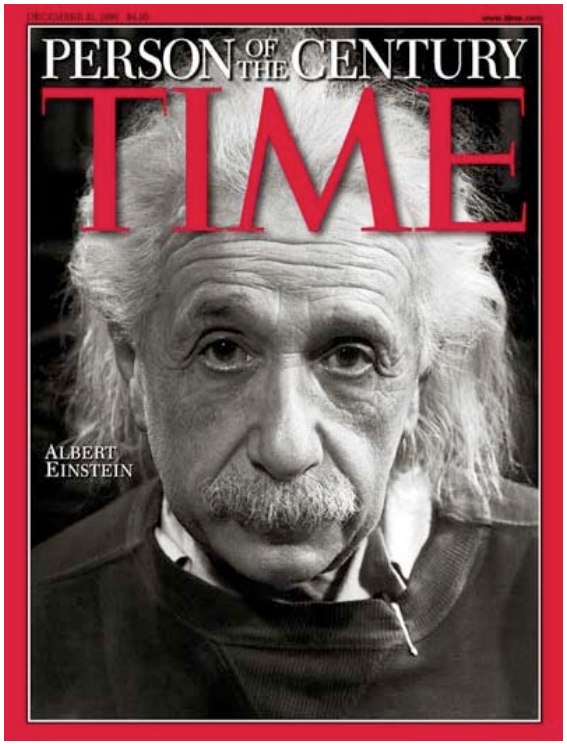
B.T.Fleming
Yale University
February 22nd, 2011

Maintaining a Work/Life Balance
APS Webinar

A few words about myself:

Bonnie Fleming
Horace D. Taft Associate
Professor of Physics
Yale University

Teaching: “Physics for Poets”, Lab courses, Experimental Particle Physics



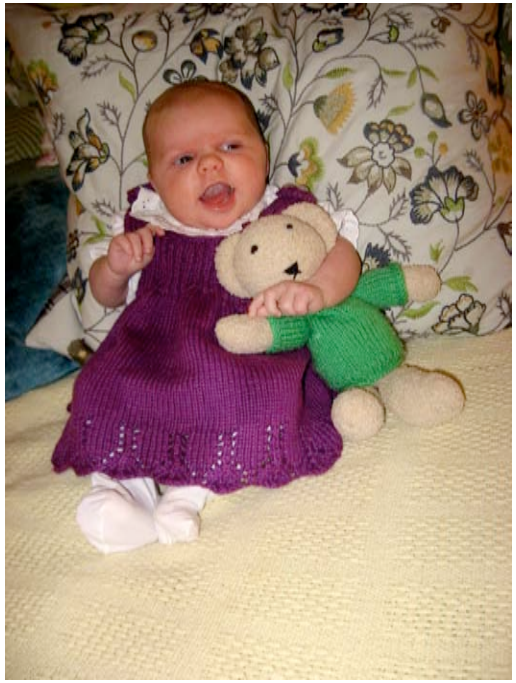
Research Program: Experimental Neutrino Physics

Experiments at FNAL

Research Team
PI: Bonnie Fleming
Research Scientist: Eric Church
Post-docs: Roxanne Guenette, Andrzej Szelc
Graduate Students: Kinga Partyka, Joshua Spitz
Undergraduates: Ellen Klein, Joseph Lozier

Labwork at Yale developing detectors

Married to physicist George Fleming with three kids!



Sam: 4.5

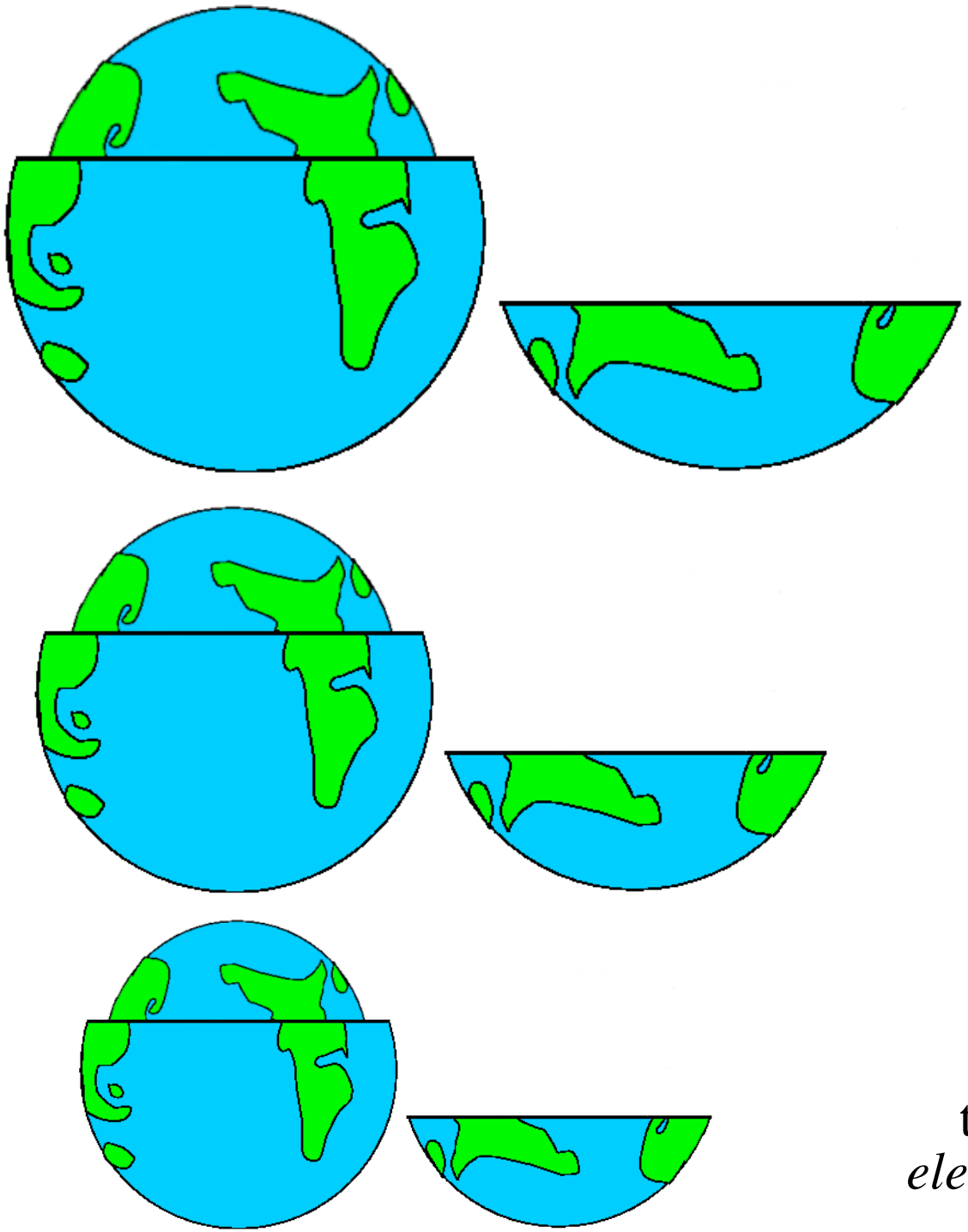
Jack: 2.5

Cora: 2 months

What I study...

Tiniest bits of matter that make up our universe

fundamental particles



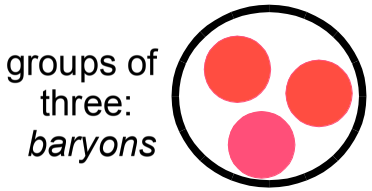
tiniest building block of matter
elementary particles of the universe

Quarks:

things that make up protons and neutrons
and lots of other particles

up
down
charm
strange
top
bottom

appear in nature only in groups



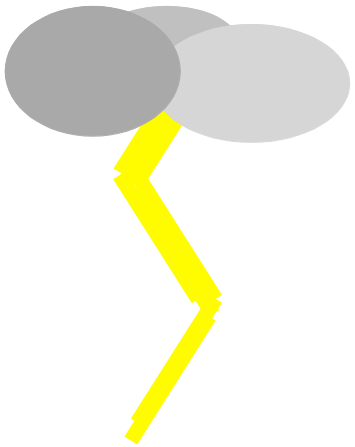
Leptons

comes from the greek, *leptos* or "thin"

electron	muon	tau
electron neutrino	muon neutrino	tau neutrino

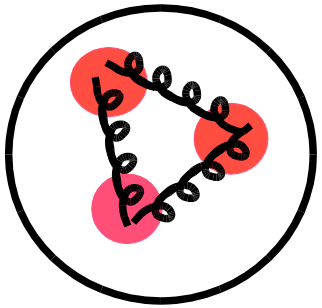
appear individually in nature

electron

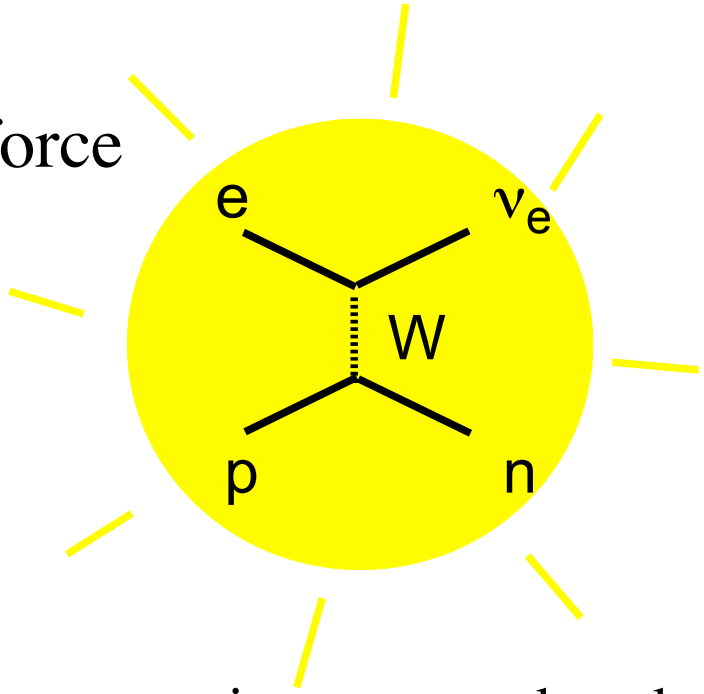


These particles interact with each other in order to:
Hold matter together
release energy from the sun
allow current flow
and other essential functions!

proton:
bound together by
the **strong** nucleonic force

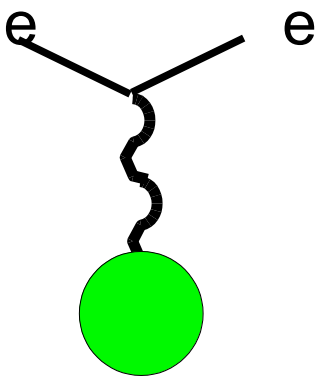


quarks inside
exchange gluons



neutrinos are produced
via the weak force
W exchange

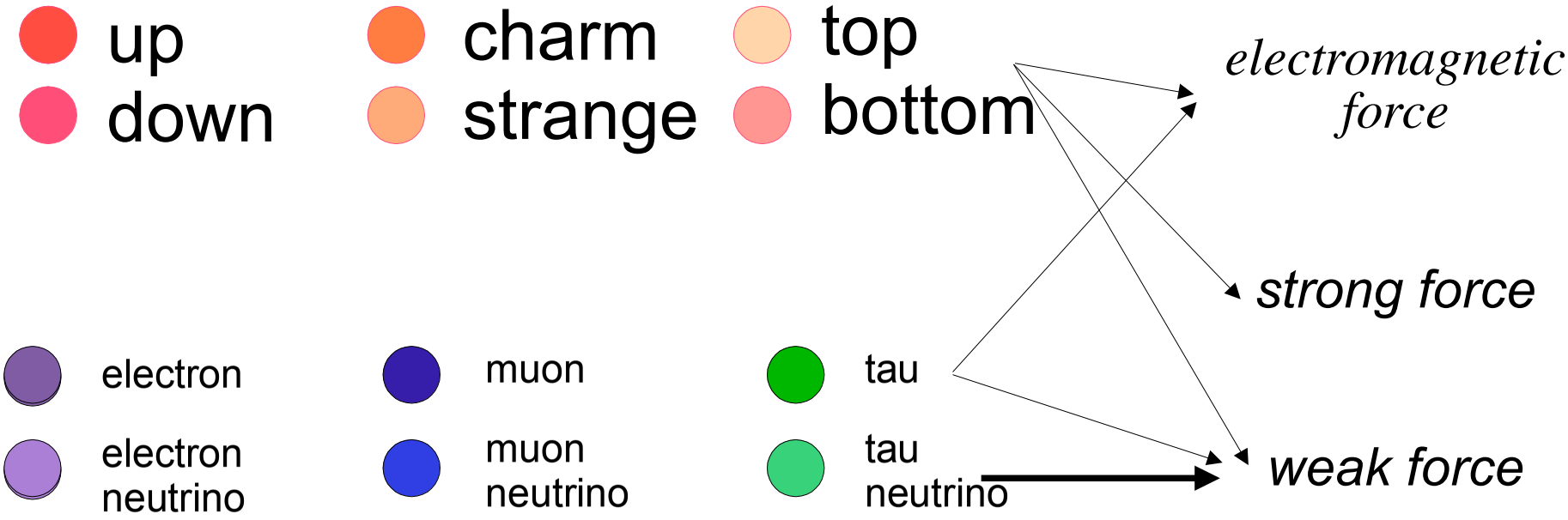
Static Electricity:
charge flow



atoms can be
electrically
charged or
neutral

Standard Model

12 elementary particles and how they interact



Neutrino Oscillations

One kind of neutrino morphs into another kind of neutrino
These oscillations demonstrate that neutrinos have mass!

Why have a work/life balance – I LOVE my research

Study Neutrinos in beams created at particle accelerators at Fermilab:

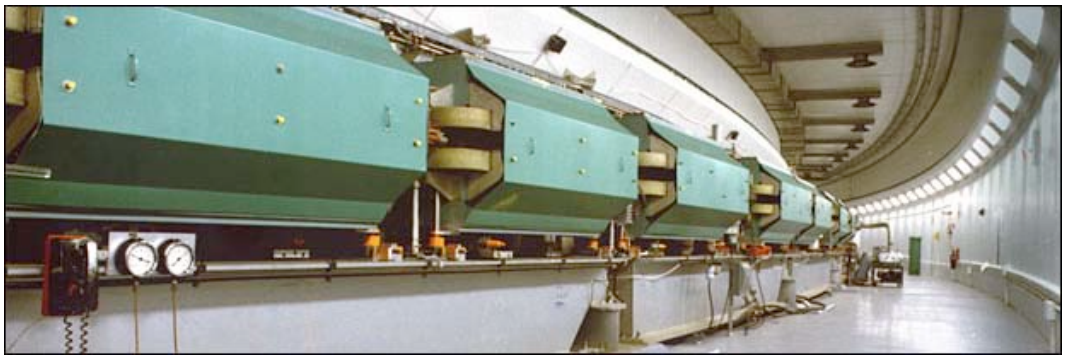
(this means I travel a lot – typically every other week at the end of the week)

My history:

•B.A. In physics from Barnard College working in theoretical physics (a little Chaos theory, a little on fractals)

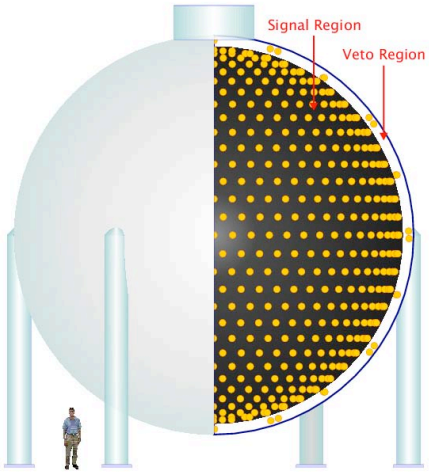
•Physics Associate at Brookhaven National Lab – Operating the particle accelerator beam for 3 years before graduate school

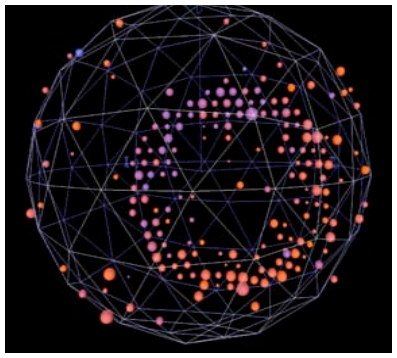
3. Booster Synchrotron



Ph.D from Columbia University on Proton Structure Measurements using Neutrinos
Neutrinos have mass!!!! Propelled my research experience towards neutrino physics.

MiniBooNE Detector





During my Ph.D work, I married a fellow graduate student, George Fleming. The month we got married, he took a post-doc at Ohio State while I was at Fermilab in Chicago....

Commuted for 3 years between Fermilab and Ohio State. Then for another 2 between Fermilab and Jefferson Lab (Newport News, VA)

Tried a number of models to see each other – settled on the "3 mortgage model"

Owned a house in Illinois, a house in Newport News, and traveled back and forth every weekend. Two mortgages plus a "mortgage in the air".

•Solved the “two body opportunity” with 2 positions at Yale in 2004
•Focused on work and growing family leading up to promotion to tenure in 2010

Giving a talk to faculty colleagues with newborn Cora on a snow day (no nanny)

Kids at Work: Pre-tenure, I felt uncomfortable bringing my kids to work – post-tenure I think its fine when there are no other options and should have thought that pre-tenure too.

Outreach:

Girls Science Investigations
GSI: New Haven
Saturday program for 6th - 8th grade girls

Conference for Undergraduate Women in Physics (at Yale, 2008, 2009, 2010, 2012....)

My kids – each born while I was in the middle of a promotion decision

- Sam – 3 year promotion
- Jack – Associate professor without tenure
- Cora – Associate professor with tenure
- ??? - Full professor ???

When I told my department chair I was expecting Sam – I thought he might be disappointed – instead, he said “You and George will be great parents!”

He has kids too – so naturally though it was a good idea....

Time management:

- The 80 hour work week is a myth! How many of those hours are spent in front of the water cooler?
- Make effective use of your time at work, because you will work less hours with kids – but in the end they make you a better scientist if you can maximize your efficiency
- Academia is a great career for combining career and family!
- Bring the kids along – this is the "It takes a village" mentality.

Sam and I at "Fermilab School". Often we take the kids with us and put them in daycare at FNAL while we are there

Things I live by:

- Lower your expectations/prioritize – my house is not as clean as it used to be!
- Marry the right guy
- Expect to pay a lot for good child care
- Be very effective – no talking at water cooler.
- Take the kids with you!
- Don't be afraid to talk about your kids....

Most important: I love what I do! My kids can see this and this is good for them