



# All scientists retreat: introduction

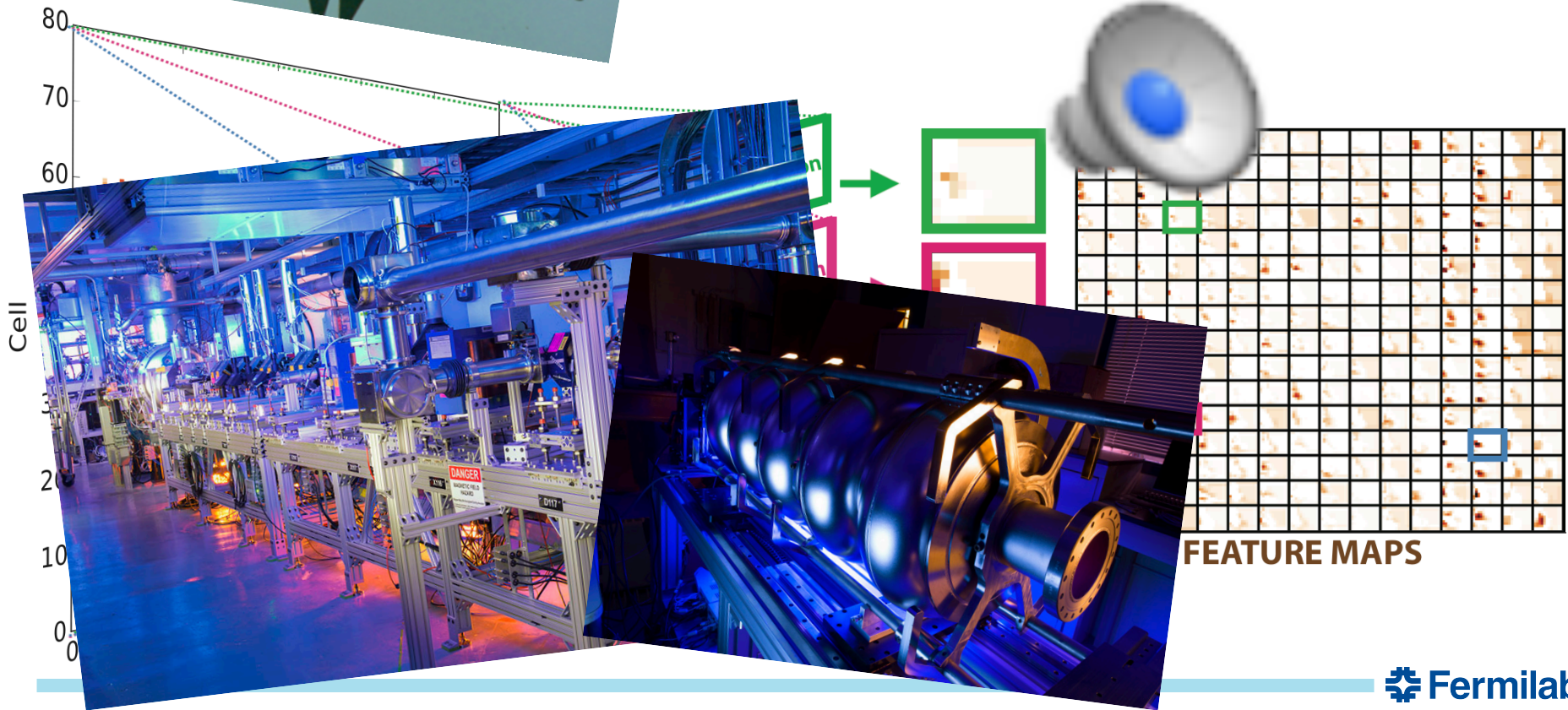
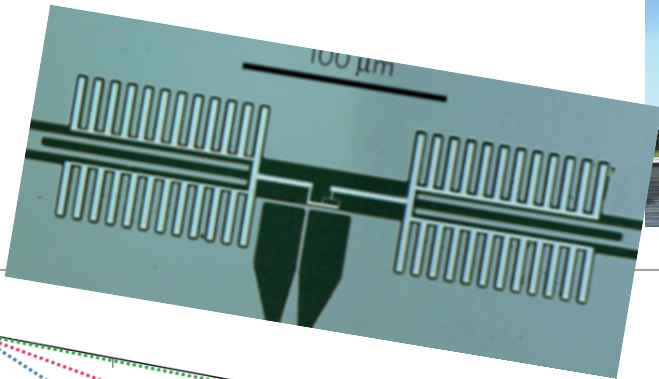
# Why are we here?

## Strategy Overview

# 20<sup>th</sup> Century Science Laboratory



# 21<sup>ST</sup> CENTURY SCIENCE LABORATORY



# What does it mean to be a 21<sup>st</sup> Century HEP Science Lab?

We as scientists have to figure this out together

There are many pieces to the problem:

- What does the cutting edge of HEP science look like 20 years from now?
- What capabilities does the lab need to acquire/grow/maintain/give up?
- How to attract/promote/retain/incentivize/empower the world-class scientists and technical staff that Fermilab we will need to flourish?

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- What does the cutting edge of HEP science look like 20 years from now?
- What capabilities does the lab need to acquire/grow/maintain/give up?
  - **Topics for our second retreat**
- How to attract/promote/retain/incentivize/empower the world-class scientists and technical staff that Fermilab we will need to flourish?
  - **Topics for today**

## Some background for today's discussions

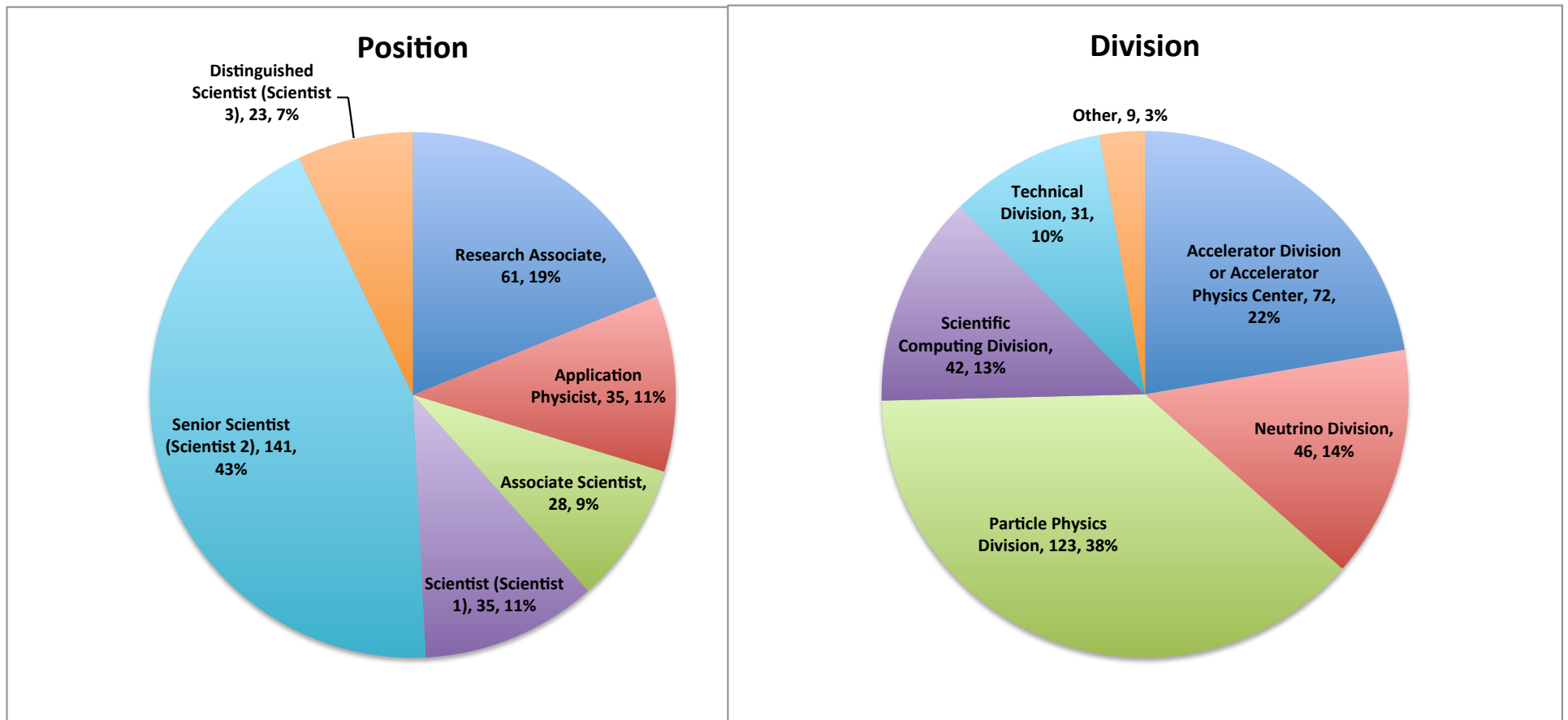
- The scientist survey
- Scientist research fractions
- Scientist internal and external recognition
- Balance between postdocs and other kinds of scientist positions
- Some lab diversity data and thoughts about meeting etiquette

## The Scientist Survey

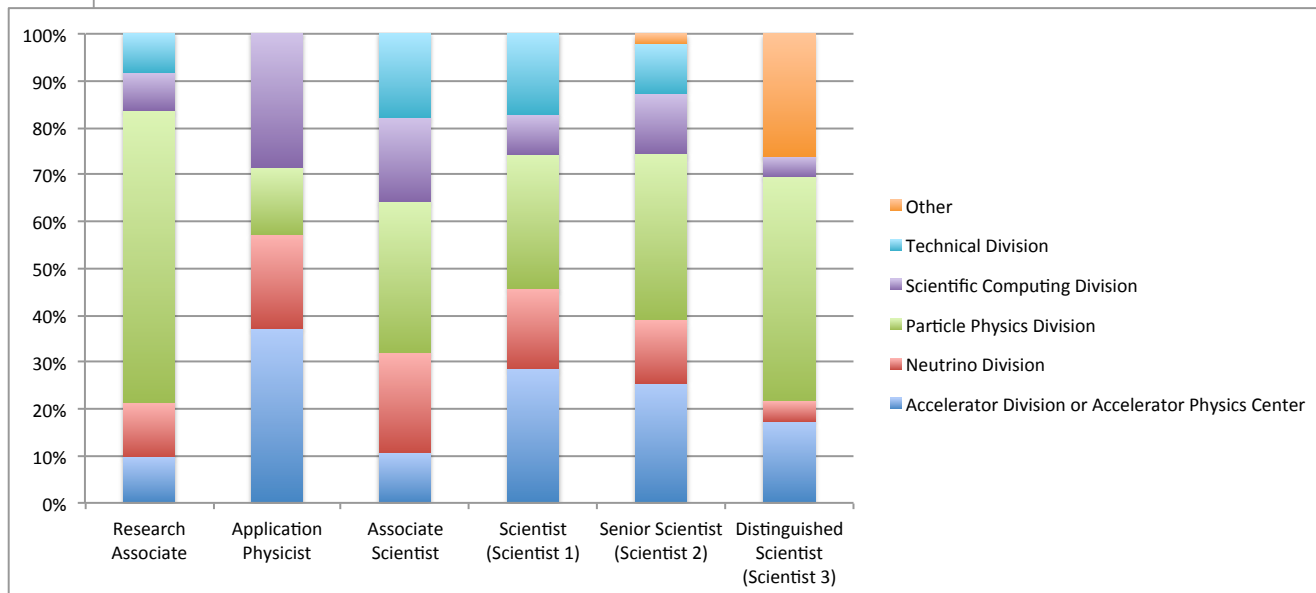
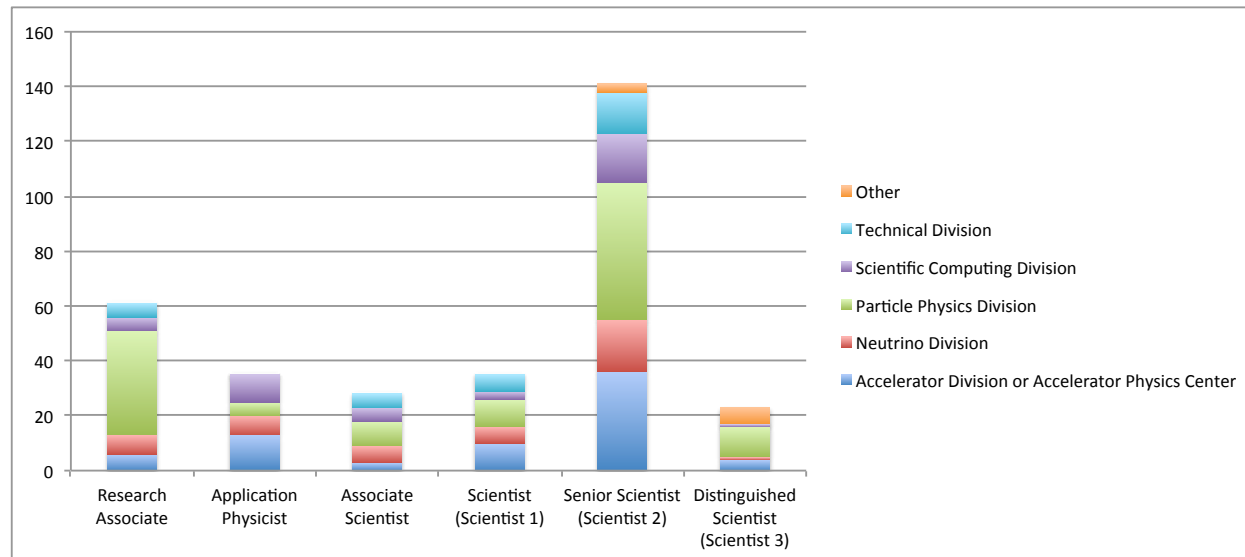
- Yeah yeah we know the scientist survey was not very scientific – next time we will do better
- But even this Version 0.1 has produced interesting results
- I encourage you to work through SAC to figure out what Version 1.0 should look like



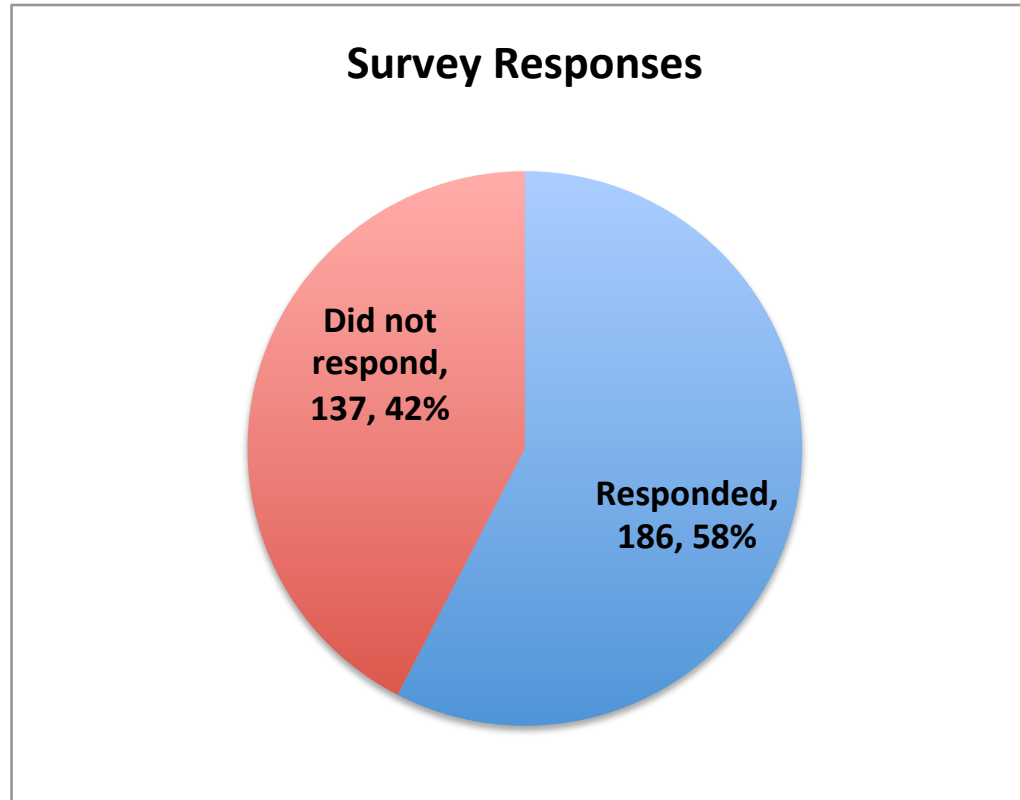
# Statistics on scientists as of 10/1/16 from FCSA



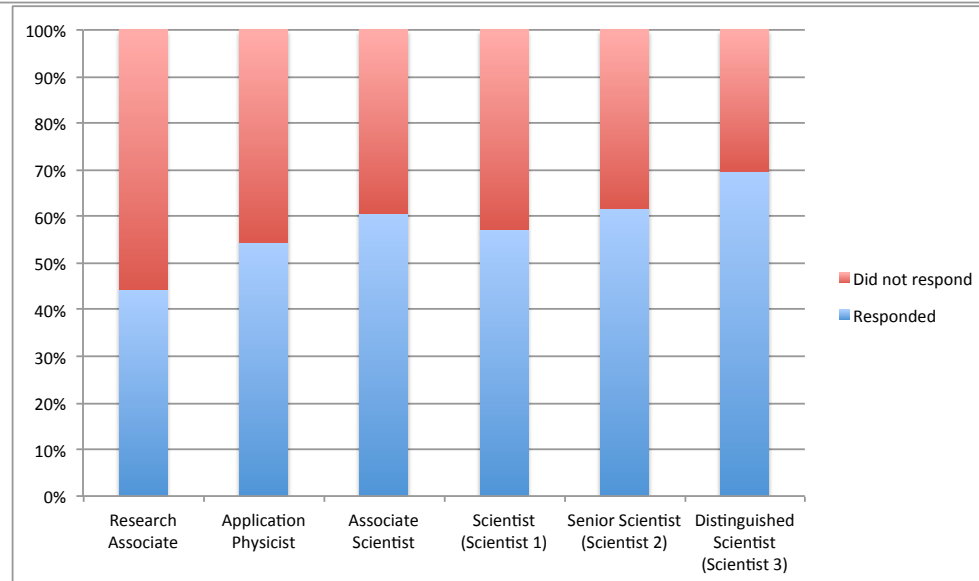
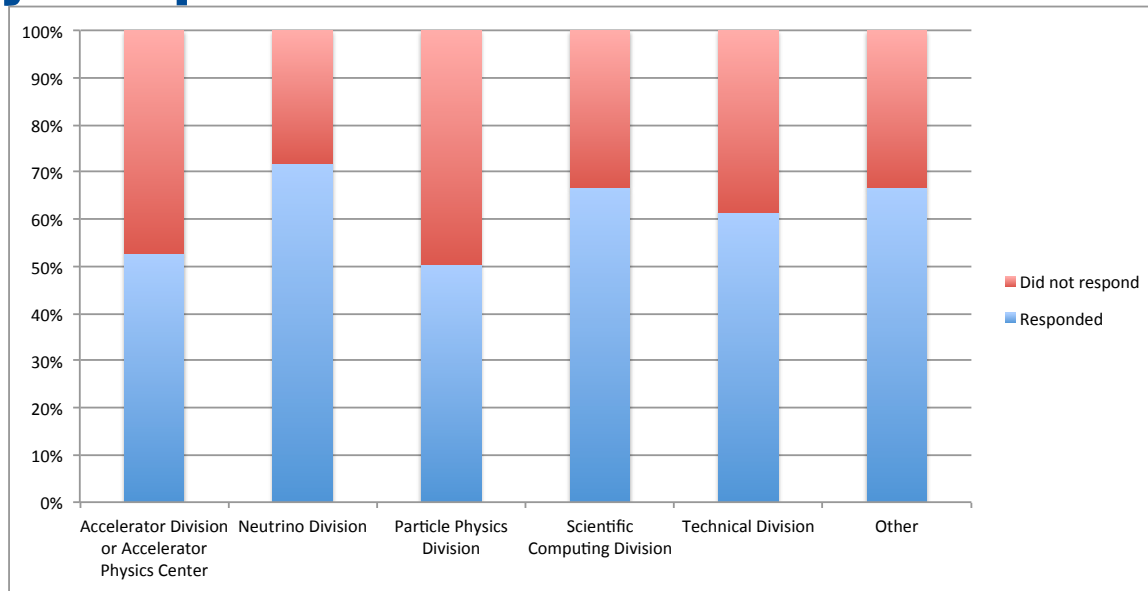
# Statistics on scientists as of 10/1/16 from FCSA



# Survey responses statistics c.f. total on FCSA list



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## Scientist research fractions

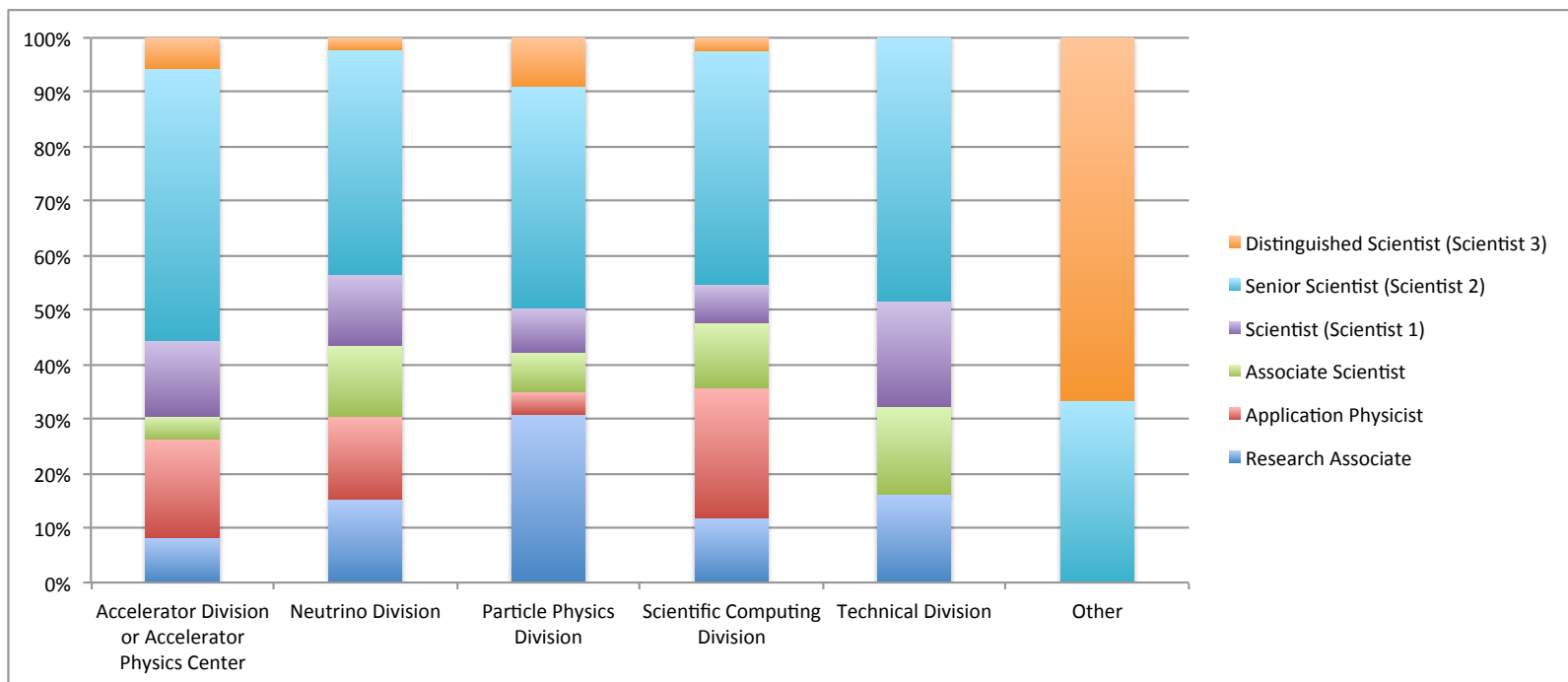
- This is part of a bigger discussion of what it means to be a lab scientist versus, e.g., a university professor
- The labs are mission driven and this is a great strength
- But scientists also need time think about data, new approaches, new technologies
- How to achieve the right balance across the lab?
- What is the role of collaborations with local area universities?

## Scientist internal and external recognition

- We have an awards committee focused our scientists becoming APS Fellows; we are doing pretty well at this, but what about other kinds of external awards?
- How can we organize to get more Early Career Awards?
- We have a few internal mechanisms for recognition:
  - EPRA awards
  - Tollestrup Award for postdocs
  - Distinguished Scientist category
- The committee that revamped the Distinguished Scientist category also recommended, based on your feedback, that the lab find additional mechanisms for internal recognition

## Balance between postdocs and other scientist positions

- Postdocs are a cheaper and more flexible scientific workforce
- Oak Ridge e.g. has ~twice as many postdocs per scientist than FNAL
- What is the right balance across the lab?
- How does this mesh with our responsibility for postdoc career outcomes?



## Diversity

- This starts from asking the question about what does a 21<sup>st</sup> century lab look like?
- We have some pretty good examples of what a 23<sup>rd</sup> century scientific organization should look like:



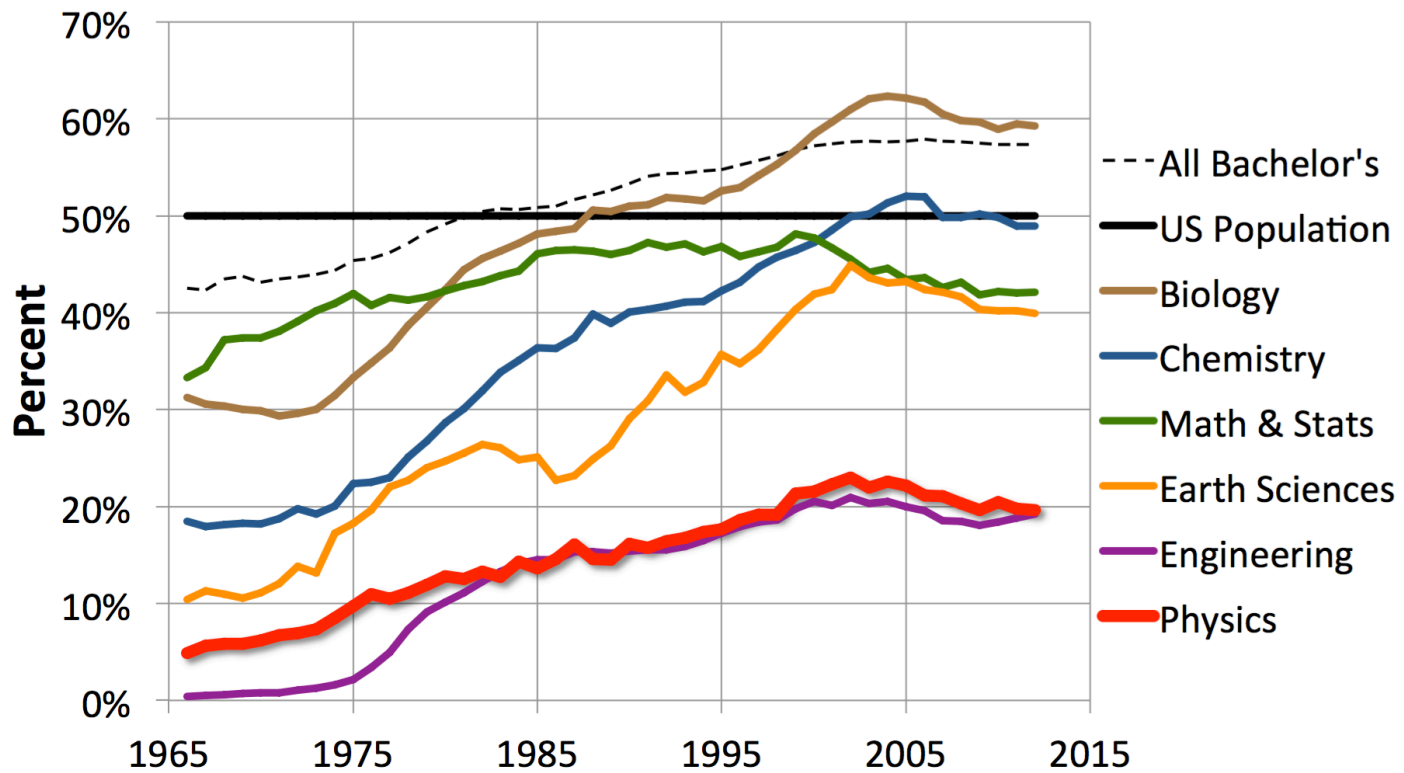
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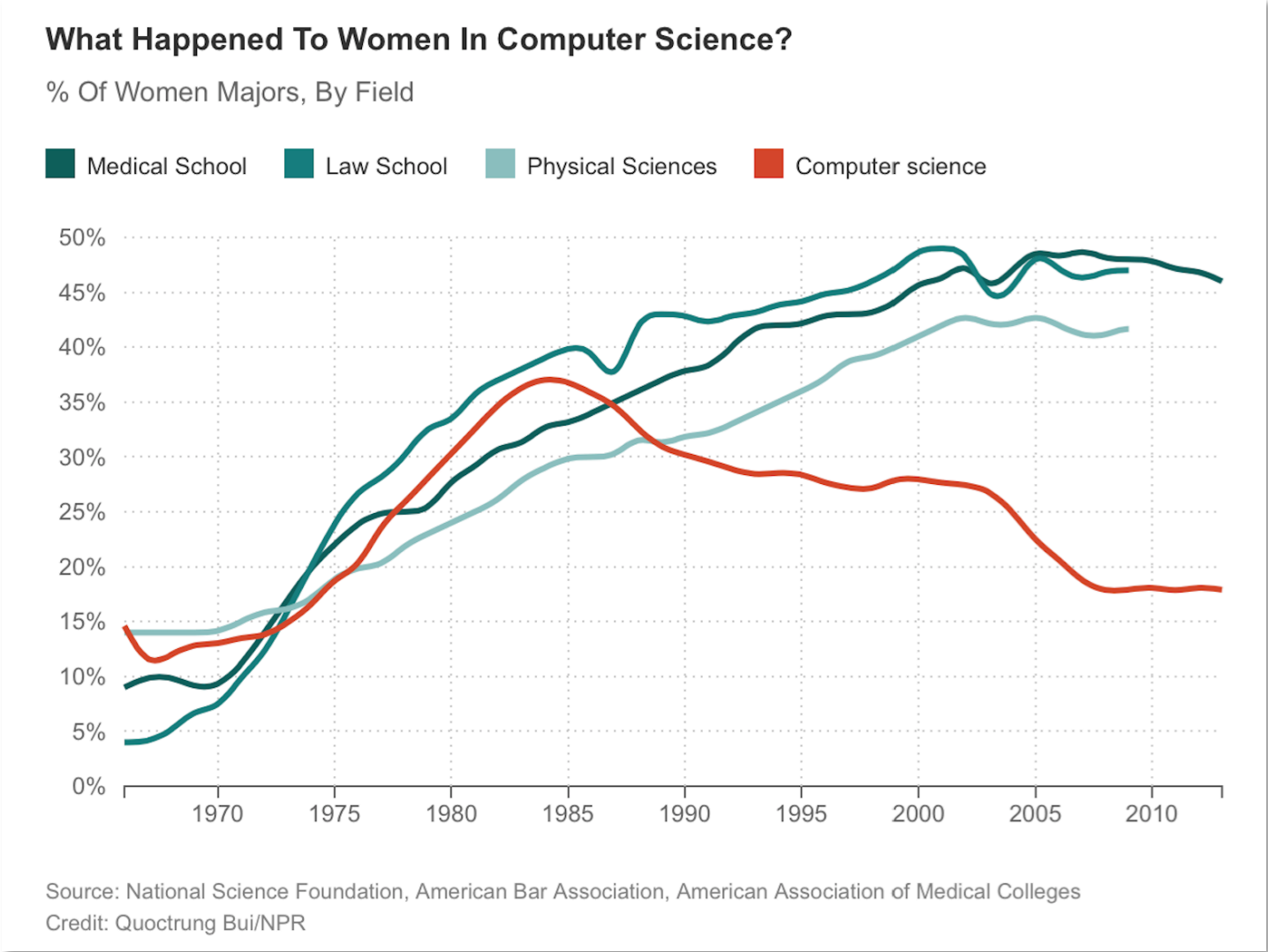


# Diversity statistics: U.S. physics

## Percent of Bachelor's Degrees Earned by Women, by Major



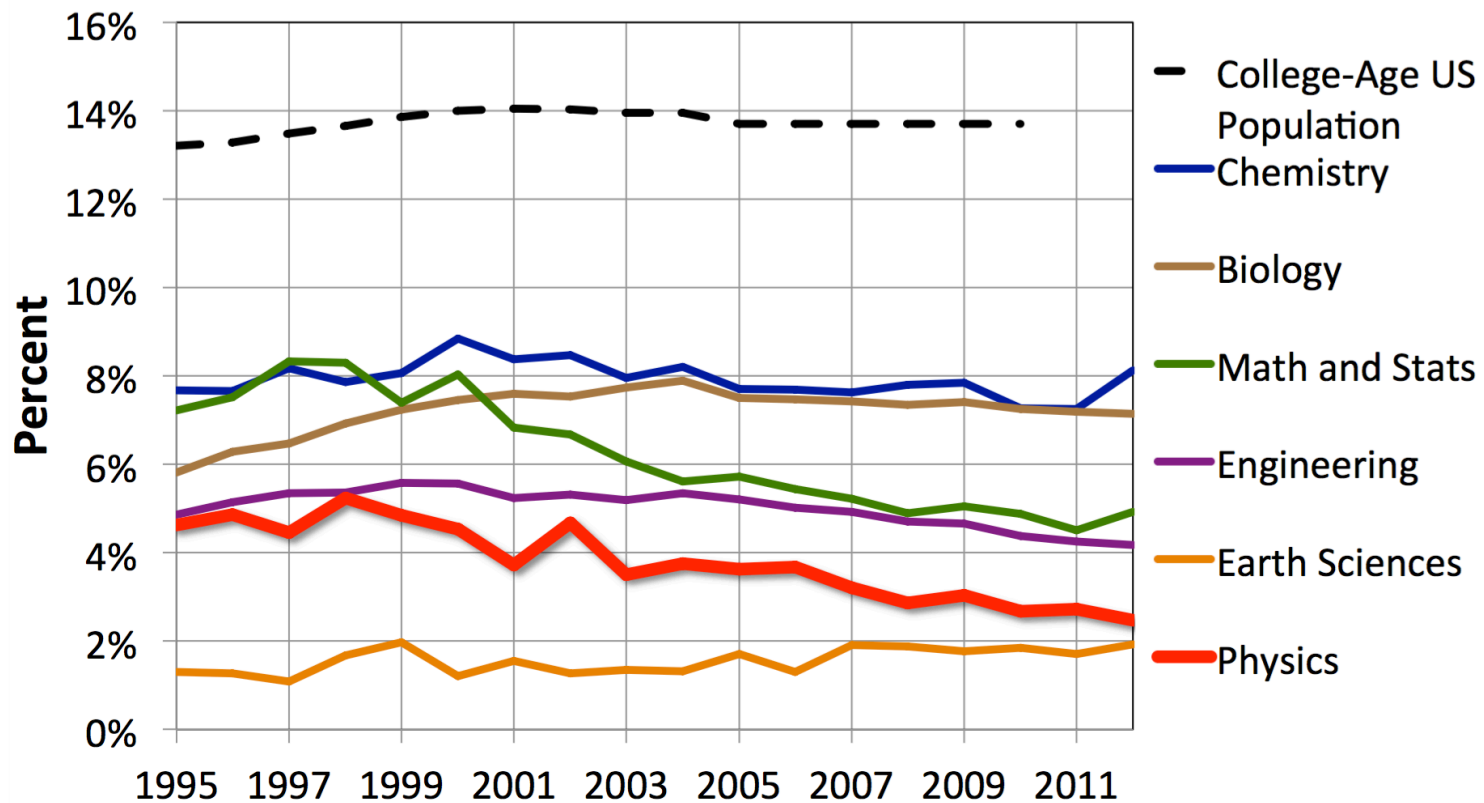
# Diversity statistics



# Diversity statistics: U.S. physics



## Percent of Bachelor's Degrees Earned by African Americans, by Major



[www.aps.org](http://www.aps.org)

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## Diversity statistics: National labs

	Engineers		
	Women	Under-represented Minorities	Other People of Color
Overall	18.0	7.8	13.4
Ames	0	0	0
Argonne	17.9	3.8	10.9
Brookhaven	15.5	7.7	15.5
Fermilab	8.8	5.8	11.5
Idaho	9.8	3.3	4.2
Jefferson	21.2	15.2	3.0
Berkeley	26.9	6.5	23.7
Livermore	14.8	5.1	13.4
Los Alamos	13.2	32.7	5.0
NETL	16.3	5.3	3.7
NREL	16.2	3.2	12.4
Oak Ridge	10.2	7.1	1.6
Pacific Northwest	23.5	6.7	19.5
Princeton	11.9	3.6	20.2
Sandia	29.6	22.8	5.5
Savannah River	16.9	n/a	n/a
SLAC	13.8	6.75	16.1
Fermilab Rank	16	9	9

## Diversity statistics: Fermilab

Occupation	Total	Male	Female	Minority	Under-rep.				
Physicist	213	188	88.3%	25	11.7%	34	16%	8	3.8%
Engineering Physicist	72	58	80.6%	15	20.8%	5	7%	2	2.8%
Associate Scientist	22	17	77.3%	5	22.7%	3	13.6%	1	4.5%
Research Associate	68	53	78%	15	22.1%	24	33.4%	8	11.8%
Engineer	203	185	91%	18	8.9%	40	19.7%	13	6.4%
Computer Occupations	228	177	77.6%	51	22.7%	45	19.7%	11	4.8%

Lab as a whole (1820 employees):  
 23% women  
 8% Asian  
 10% under-represented minorities

## Culture and atmosphere

- Obviously we have a diversity hiring challenge
- In addition, since our current lab workforce is not very diverse, we have a culture and atmosphere problem
- This is in spite of the fact that (almost) all of us are well intentioned good enlightened people
- Without making the atmosphere more inclusive we will never get to where we need to be

## Culture and atmosphere

- Precisely because this problem is less obvious to many people, and is rather fuzzy by nature, it requires all of us to be sensitive to it
- We have a bunch of self-organized lab groups thinking about this:  
<http://diversity.fnal.gov/lab-resource-groups/>
- The directorate thought meeting etiquette was a good concrete place to start, and we asked the Resource Groups to come up with a proposal. It will be part of a something wider: Fermilab Codes of Conduct

As scientists, what ground rules for meeting etiquette would you like to have, and what would appeal to you in how we communicate them?

- Nigel and I are enthusiastic about this, but request your help in making it work



## Tuesday, February 7, 2017

- 11:30 - 11:45      Lunch - Grab box lunch *15'*
- 11:45 - 12:00      News in CDF Big Room *15'*  
Speakers: Dr. Joseph Lykken (Fermilab), John Myer (Fermilab)
- 12:00 - 12:30      Intro talk in CDF Big Room *30'*  
Speaker: Dr. Joseph Lykken (Fermilab)
- 12:30 - 14:15      Breakouts into 12 groups *1h45'*  
*(8 groups in IARC rooms, 2 groups in ICB rooms, and 2 groups in CDF Big room)*
- 14:15 - 14:45      Break – CDF Big Room *30'*
- 14:45 - 17:00      Summary presentations and discussions with the whole group *2h15'*

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Summary Part 1      *15'*

Speaker: Laura Fields (Fermilab)

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Summary Part 2      *15'*

Speaker: Harry Cheung (Fermilab)

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Discussion      *1h45'*

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