Career path Q&A minutes - 24 April 2018

1. Postdoc experience for a faculty job

Question:
What is the most valuable experience you can get as a postdoc when preparing for faculty jobs?

Answer:
Replies seem to be differently spread over the world:
Europe: be creative (do not just repeat what others did at a different center of mass energy), try to push forward our own ideas and demonstrate they are feasible. Being expert in one area can help
China: be flexible, abilities in various subjects (software, hardware, physics). No way to get a permanent job if you only did physics analyses
US: be good at physics, demonstrate that you have a solid physics background

Conclusions:

- Should demonstrate can deliver on specific challenges even if was given by someone else
    - master some area with a deeper understanding than others
    - do in multiple areas - that is take experience to other areas and exploit it
        - but do not bounce around too quickly or over-subscribe
- Know when to start and when to stop
- Don't do the same thing forever
- Different institutes value different skills/profiles at different times
- Enjoy your work -> it shows in your effort and enthusiasm
- (HEP specific) how well can you work in a large team getting more from the team around you then just the sum of the parts
- Your own new idea -> even if small. need to show creative thinking
    - theory colleagues usually provide good ideas (don't think people come up will all their ideas on their own!!)
- (US) Solid physics analysis effort
- (China) Wide experience, look what is needed i.e. software/hardware
- Your interpretation of the future: Do you have one? If not, think about it

2. Start / Finish analysis or detector sub-system versus Maintain same thing?

- This or that questions are not the right way to think - it is not black and white. There is a lot of gray.
- Both are needed in practice - the deliverable is some new piece of intellectual contribution
- Technical tasks can also be done "start to finish" even if the task carries on

    - i.e. maintained sub-det for 2016 data taking and achieved _____. Without the "and achieved" part pointing to some intellectual contribution, it does not really matter what the first part of the sentence is
    - Value and subject importance is institute- and time-dependent

3. Grant applications - Emphasis on converships

Question:
Why are convenerships given so much importance over doing and knowing actual physics? I have been told that applications from people without convenerships aren't even considered? Is this true?

Answer:
Not true. One should try to see a convenership as a demonstration of skills at doing physics and also at leading groups.
Follow up question:
But in the UK it seems to be a strong requirement.
Well, what it is important is what you did as a convener not just that you were a convener!!! Sometimes being a conveners plays against you! If you just filled indico agenda, reply to emails, but you kill the group in terms of motivation then it is not good at all that you were a convener!

Conclusions:
- Help for application but not a "must have"
- Good indicator but not a requirement
- Concrete example of leadership experience (but not only example of it)
- Required in UK for advanced fellowships? Formally not true but does give people an indicator especially a help for those outside of HEP on review panels
- "What did you do as a convener" is still a question you have to answer and answered well (see point 1). Being a convener is not enough

4. Grant applications - New and creative ideas

Question:
Difficult in big collaboration to push for a new idea. This is discouraging.

Answer:
Seniors agree, this is discouraging. But try to be strong when defending it. Try to be the best rather than the first. Also, try to propose many, do not give up, you will be lucky.

Conclusions:
- Sometimes push-back from collaboration because do not understand value or have different vision
    - Don't be discouraged. Need to follow through and be strong with your new idea. If you don't believe in it and commit, who will?

- Are we losing people in the collaboration because of this (not expressing or pushing through creative ideas and leave out of frustration or resign to repeating things): Yes! That is why it is rewarded!

Question:
How can you decide that your idea is good if nobody else in a big collaboration thought about this?

Answer:
Apply, apply, apply. Sometimes there is a good fraction of luckiness there. Keep in mind that a good physics motivation + hardware is a winning choice. Physics + software seems to be a granted failure according to the audience (Swiss National Foundation)

Being lucky seems to be a very good fraction of somebody's career

Remember that staying in physics is not everything, there are many other things one can do with a physics background

Being good at teaching is crucial for your career. Being able at supervising students is crucial.

Back to the longstanding discussion: CP vs Physics work. According to the audience having strong contributions in physics is more important than CP.
According to the panel this is not true. The link between the two is important. You can't be a good professor if you did not contribute to any physics analysis. But if you only did tons of similar SUSY searches...then equally your experience lacks diversity.
Number of papers does not matter, the quality of the paper is what matters.
Talks related to your papers are important. It is a way to prove what you did for an analysis.
Looks like it is quite important who are the people you work with, in the sense that if you can decide then go to work with somebody you trust and from whom you can learn a lot.

Conclusions:
- Huge randomness factor - mentioned several times
- Lots of luck - mentioned several times
    - need to have right idea at the right time and get the right committee/referee
- If rejected, don't take it personal - try again! Keep trying!
- Killer question because collaboration is so large: "If I don't give you the money, will it be done anyway" --> Be ready for this and sell your topic (hard!)

5. Grant applications - Letters: Who to ask?

Question:
We all work in the same experiment and there can be a good overlap in referees. How to choose the best ones?

Answer:

Choose the ones who know you the best. Aim for very specific letters, rather than general letters.
Other side of the stuff: if you know who is in the committee ask to somebody who is known by the committee.
Often the committee is not know by the time of applying.
Other point: the people who know you the most are often down in the chain, but high level people do not know you at the level of writing a very specific letter.
Try to establish good connection with PC or so. Maybe do not ask the guy who you share an office with, but maybe aim for somebody more senior.

Question:
Are you hiring in the near future? (Ah ah ah)

Answer:
In Rome, yes, not sure when. At UCL most likely next year. At CERN good to know that are changing the platform (just technical notice). In China, plenty of opportunities.

Conclusions:

- Some who will write you a personal letter not a generic letter even if the person is "super famous"
    - value = who writes it X content
- Better if writer knows on of the committee/panel personally
- Spread around - don't just get letter writers from your institute, exploit the international dimension

6. Grant applications - Software+physics skills are not valued?

- Topic of discussion i.e. in UK
- Needs more attention

7. Grant applications - Need to prove that can attract funding?

Question from Vidyo:
Attracting funding - is this a important?
The question above is related to the following (pre-submitted) one too:
Is it true that all tenure-track appointments these days require a candidate to demonstrate ability to attract funding? I.e. if you cannot prove you can attract funding then you have virtually no chance of a permanent position. If there is any truth to the above, can the panel elaborate on how they and the rest of the senior community are actively providing and supporting opportunities for postdocs to gain experience in this, i.e. beyond things like just providing feedback on grant proposals that the postdoc has written on their own.

Answer:
This does not seem to be a requirement. Not in physics not in other selection committee.
The committee will trying to judge if you are able to get funds.
It can be a plus if you are, but it is not an explicit requirement.

Conclusions:

- Never seen as a requirement.
- Where do you want to be in 5-years, aware of challenges but do not have to prove can surmount them
- For tenure track jobs - no
- For tenure - yes (US, others but not all, i.e. Germany it is not a requirement)

8. Grant applications - Does paper count matter?

- Is it a good strategy to prefer short papers that will get out faster to increase one's publication count?
- Effort and originality matter the most
    - talks at conferences validate your claim to have been an important part of a paper by saying "the collider community picked me to present this material"
- Work with people you like - that matters more
- Paper count does not distinguish people within HEP and outside of HEP the numbers are very different

9. At what time in career should one start to apply to fellowships?

- Do this when you are ready but don't be modest about when that time comes
    - Get external calibration as to when you are ready (talk to people! Oh no, human interaction)
- There are many levels of fellowships so pick the one that works best for where you are in your career

10. What are indicators that you should look outside the field for a job

- Some use a self-imposed deadline i.e. age
- The world does not end when you leave physics (lots of interesting and important stuff in the real world)
- Ask for feedback from senior colleagues who you trust who feel comfortable being honest with you
- It takes luck, persistence, and realism
- Stories of some taking several post-docs then becoming heads of group
- Also stories of many talented physicist who did one post doc and left
- Are you still having fun? If no, stop.
- Side note (not discussed) the field exists to train people for industry. It is more natural to leave the field than to stay in terms of how the field is funded.

11. Moving faculty

Question:

If a junior faculty wants to apply to other places, it is hard to keep that as a secret in the current place, and when the current group knows that, they would probably not support that person too much anymore. Any tips on how to deal with that?

Answer:
Do not even think to keep it as a secret
Changing institution is a frequent situation, try to talk with your supervisor so that he can support you as much as he/she can do
Try to apply only where you want to go, do not decline too many times
Either they want you and they support you or they do not want you and let you go
You cannot think to keep it as a secret, it will not work, we all live in the same community
Seems that UK- Germany approach is similar
"Just be nice to people" seems to be a reasonable advice!

Conclusions:
- No support from current group is odd. Suggested not to keep it a secret as it can hurt you in the long run.
    - board expects feedback from current group
- Discuss with team leader!
- Sometimes people might keep it a secret because it is a gamble (other institute rejects you). Yes on can play games, but being open and honest also has its value.

12. Research career scientist

Question:
Can one be a research scientist at a university for their entire career and is this a stable position? Say I am happy to guide phd students but not interested in teaching regular classes. At the same time, I don't want to work at a lab. Working in a lab as permanent staff (not CERN but say a US lab like BNL/ANL) comes across as a possible isolating experience compared to working in a University where you meet people from different disciplines. Is this true? I am afraid that the US budget will be moved to neutrino physics than to experiments like ATLAS and CMS. Is this a reasonable fear to have? How likely would it be to get a permanent position on say ATLAS in a US university and to then lose your job because the government stops funding us.

Answer:
Seems that in Canada there are some specific positions for research only at university

Conclusions:
- (US) no, only from soft money and runs out
    - could do with more to benefit the community
- In Canada have small number through the IPP
- As postdoc, spend lots of time educating students and post-docs versus getting your research done

    - (US) research is more important that teaching but good to show that can supervise students : if 2 close candidates, this might be the epsilon that makes a difference
    - The "good citizen" idea of helping other and doing common tasks is rewarded

13. US moving to intensity frontier?

- Yes, but still big money in the HL-LHC program

14. Children and family during Ph.D.

Question:
Career + family: Will it ruin the whole career in academia if one gets a child during a PhD? It would cause an empty space of 6-12 months to your CV, and it would take more time to complete your PhD. Who would hire such a person (for a postdoc or in general in academia), especially in the field of particle physics where there's definitely no lack of talented people? How to tackle this issue, what tips and advice would you give to PhD students who think about having a family rather sooner than later (when there's no guarantee of permanent job in our field anyway...)?

Answer:
Looks like what is important is that your partner is willing to help you in taking care of the child.

Conclusions:
- Depends on partner/family/friend's support of your career, not on the child
- Career breaks are taken into account (some fellowships offered to those returning from them)
- Pregnancy is strenuous so might need more time before child is born
- Work life becomes more rigid in terms of time management
- CERN community is very supportive if you are open about your constraints

15. Positive discrimination

Question:
Are women really given preference to men in permanent positions? If so, how much worse does a female candidate have to be for her to be accepted over a man? Does the difference in abilities/achievements have to be +/-10% or more? Btw, I'm a female researcher and I ask because I am tired of being told that it will be easier for me than a man even though I work really hard. So if it is +/-10% that will be easier to defend than say a +/-30% difference.

Answer:
It looks like there is a real bias against women: people must be aware. There is currently an effort to try and improve this but it still requires a lot of attention and care.

Now people seem to encourage applications from female candidates and minorities in general. This is to make sure that there is no discrimination a priori, not to say that worse female candidates will make it against good male candidates.
China also paying attention to this

Conclusions:

- Lots of bias against women -> could be subconscious but committees must be aware
    - "women and minorities apply" is a line to combat this subconscious bias i.e. idea that 80% of people with that job are male so must be male to apply is directly confronted with this statement
- There is pressure to increase number of females in the field but there is usually one position and cannot fractionally choose - the best candidate is taken regardless of demographics