Online Version

FIND A FUNDING MINDSET

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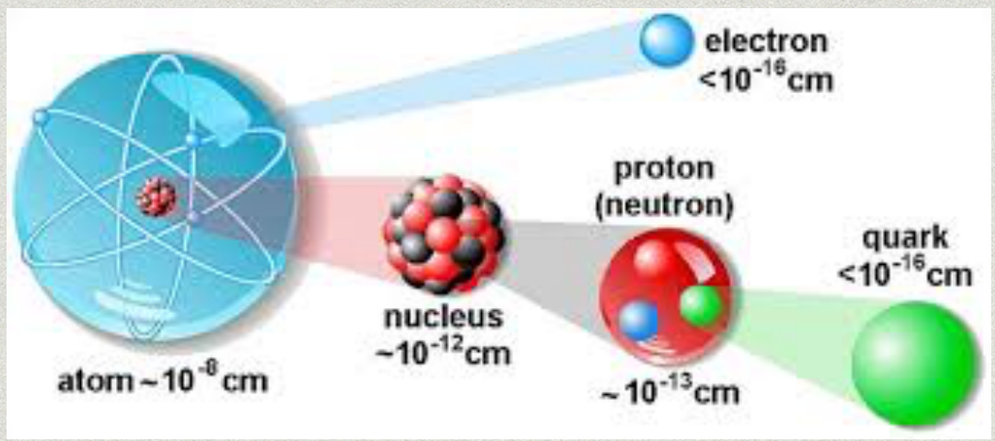
NAVIGATING THE FUNDING LANDSCAPE - WALES

Introduction

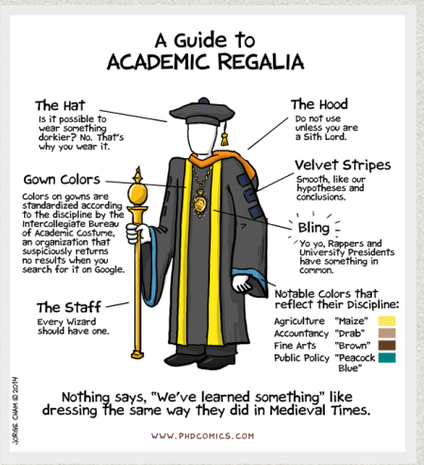
- Overview
- Me, historically
- Specific experiences
- My conclusions

Overview



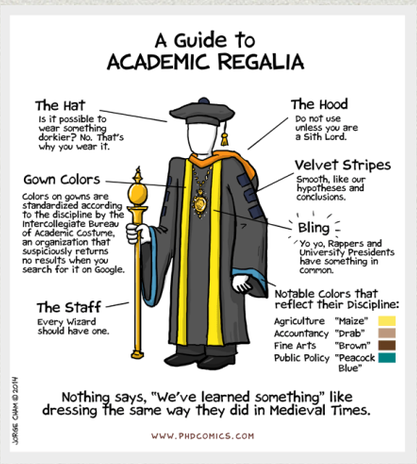
- A *personal* view of the funding application process from a career experimental particle physicist.
- My *experiences* and what I have learned (warning: you may be perturbed).
- My *advice* (use at your own risk).
- Responsibilities I took on, to *increase* my research profile.
- An opportunity to *reflect* upon how far I have come (as well as how far I have to go).

Employment Timeline



- 2001-2006
  - PhD candidate, University of Illinois at Urbana-Champaign
- 2007
  - Research Associate, Carleton University — 1-year fixed term
- 2008-2012
  - Research Associate, University of Bristol — 3-year fixed term; 2-year fixed term
- 2012-
  - Senior Research Associate, University of Bristol — 2-year fixed term; 2-year fixed term; 4-year fixed term

Employment Timeline



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Collaborator offered me a job

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Applied for job with other collaborators

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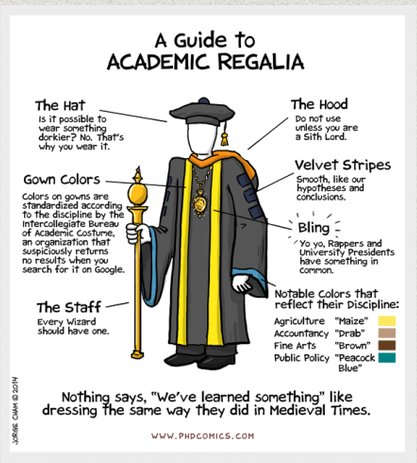
  - Research Associate, University of Bristol — 3-year fixed term; 2-year fixed term

Progression

- 2012-
  - Senior Research Associate, University of Bristol — 2-year fixed term; 2-year fixed term; 4-year fixed term

No path to promotion

Employment Timeline



- 2001-2006
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Wanted to accomplish more → Collaborator offered me a job

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Wanted to accomplish more → Progression

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Need to change strategy → No path to promotion

Strategy change

- Took **development** courses offered by Bristol
  - One in particular “Cultivating Leadership” helped me take stock of my situation, gave me space to think, and gather the courage to proceed.
- Became **proactive** and **serious** about writing grants
  - It’s cynical, but universities are businesses and they follow the money. Your job security and research depend on grant income; should you want a *long* academic career, you will need to secure it yourself.
- **Thought**, a lot
  - Started developing a novel research idea, building from information I learned at a conference, then took actions until I had a research program and CV that I could start presenting to the funding agencies.

Career highlights mid-2013

- **Convener**, Charm group (2007-2014), CLEO experiment.
- **Helped supervise SEVEN** Ph.D.s (LHCb, CLEO data).
- **Published** three papers (2 CLEO, 1 LHCb) within a year
- **Travel grant** (£1040), Royal Society Travel Scheme.
- **Taught** undergraduates and MSci students.
- **Local admin tasks**: outreach; group webmaster; designed group posters.
- STFC **bursary** to attend Royal Society media training.

Improving my standing ’13

- £1,000 **award** from the University of Bristol Research Staff Project Fund (via EPSRC Entrepreneurship funding).
  - Provided training in "action learning.”
  - Demonstration of leadership and research career support.
- **Direct supervision** of undergraduate summer project.
  - Proof-of-concept results for grant applications.
- Helped **interview** and **select** Bristol’s doctoral candidates.
  - Leadership and people management.

Job Applications

- 2006 - Research Associate at Carleton
- 2007 - Research Associate (US uni), Research Associate at Bristol
- 2010 - Research Associate (UK uni), Lectureship (UK uni)

- 2013 - Lectureship (US uni), Fellowship (specific to one UK uni),
  Royal Society URF, STFC Rutherford Fellowship
- 2014 - Lectureship (UK uni), **Royal Society URF, ERC Starting Grant**
- 2015 - **STFC Rutherford Fellowship**

- 2016 - Lectureship (UK uni), Lectureship (UK uni),
  ERC Consolidator Grant

My fellowship applications from 2013-2015 were supported by the University of Bristol

Interview + Offer
No Interview
Currently Planned

Before I begin

- I received very good *support* from academics in my Particle Physics group, the School of Physics, and Bristol's Research, Enterprise, and Development (RED) team, with regards to reviewing my applications.
- At times have had *mentors* who have been able to help me with additional suggestions.
- I am very *thankful* for all of the time put in and all of the advice that I have been given. Not all of the advice worked, but since it was free, I can't complain! Instead, I am learning from the results as I go along.

Royal Society URF

Applied for ~£500k, twice; 2-3 page research proposal (9-10 pages total, incl. publication list, lay report)
3-8 years of postdoc experience required; 5 year fellowship (extendable later to 8 years)

- In September 2013, applied for the Royal Society URF.
- Did not make the first shortlist; received no feedback.
- Discouraging, but these are difficult to get
  - Helps if a FRS is familiar with you / present an outstanding case
- Applied again in 2014, same result.
  - Pressed for feedback: *"The panel noted that the proposal lacked detail and the aims were unclear."*
  - Learn and apply to other fellowship applications

Rutherford Fellowship

Applied for £449k; 3 page proposal + publication list, outreach; impact statement; CV; Lay report
2 years of postdoc experience required; 5 year fellowship

- In September 2013, I also applied for an STFC Rutherford Fellowship. I passed an internal competition in Bristol.
- I received mixed, but detailed, feedback on my proposal from three reviewers (only a sentence from each shown here):
  - R1: *"Well above the threshold for consideration"*
  - R2: *"He should be strongly encouraged to continue to develop his program"*
  - R3: *"He has not yet displayed the leadership potential expected"*

Rutherford Fellowship

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- R3 made the point that my focus was on analysis,
  - Allowed to respond to feedback, so noted plans related to the design and performance of our experiment.
- R3 worried I could not lead my entire program.
  - Expressed that I was clear where I would lead (or collaborate).
- R3's assessed that *"the number and nature"* of my leadership roles on CLEO *"falls below the level expected."*
  - Provided specific examples of how my work has been appreciated
  - Indicated that my work carried considerable weight at CLEO.

Rutherford Fellowship

Applied for £449k; 3 page proposal + publication list, outreach; impact statement; CV; Lay report
2 years of postdoc experience required; 5 year fellowship

- *"Unfortunately you have not been selected for an interview in the first instance. However, your application was **highly rated** and you are on the reserve list for interview."*

- Very encouraged as I knew I made it into the top third of applicants for this scheme, possibly higher.
- Learned to express my contributions more clearly.
- Resolved to get more involved in the operations of my experiment.

Improving my standing ’14

- **Research staff representative** for Physics.
  I also lead the Physics postdocs group.
    - Learn about **University administration**; change the system.
- **Directly supervised** two **MSci** students on their project.
- **Invited** to join the Heavy Flavor Averaging Group.
    - Increase my **international standing**
- **Responsibility** for the alignment of the mirror in our LHCb Cherenkov subdetectors.

ERC Starting Grant

Applied for €1.5M; 5 and 15 page proposals (Total 43 pages!, including CV, publication list)
2-7 years postdoc experience required; 5 year fellowship including postdocs and students

- In 2014, I applied for the ERC Starting Grant. I passed an internal review stage in Bristol.
- The final application involved a 5-page and 15-page proposal (ERC wanted both at the beginning). It was quite a task and I was not sure if I could get it done, but I persevered and managed to finish it to what I thought was a high level of quality.
- Unfortunately my proposal ranked only between the 26th and 40th percentile (of 3272 applications! Still disappointing.)
- *"The proposed investigation is an important subject in the domain of precision measurements in heavy flavour physics. It is not clear from the proposal how well the studies are embedded in the LHCb physics program and what is the expected sensitivity."*

ERC Starting Grant

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2-7 years postdoc experience required; 5 year fellowship including postdocs and students

- Reviewer comments (only a sentence or two from each shown here):
  - R1: To what extent has the PI demonstrated the ability to propose and conduct groundbreaking research? *"Outstanding"*
  - R2: "*The proposed analyses build on previous work and are more straightforward than ground breaking.*"
  - R3: *"While some ideas are very interesting and original, it lacks focus. It is therefore difficult to assess what are the objectives and there is no mention of expected significance."*
  - R4: *"In summary the proposed work is well planned and imbedded in the general program of LHCb."*

ERC Starting Grant

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- Implementing Feedback
  - Endeavor to explain why my proposed analyses have the potential to be **groundbreaking**.
    - Make my research ideas **relate** to each other
    - Provide specific **timescales**
    - Express the **sensitivity** of proposed measurements.
    - Be clear and **concise** about the aims of my research.

Improving my standing ’15

- Became a **sub-convener** within the LHCb charm group.
  - **Pointed out** an area where more *leadership* could valuable.
- Invited to be a **discussion leader** at the Tenth joint CERN-Fermilab Collider Physics Summer School.
- **Reviewed a journal article** for Physical Review D.
  - Use my experience to influence the field

Rutherford Fellowship 2

Applied for £479k; 23 pages (including 3 page proposal + publications, outreach, impact, CV, Lay report)
2 years of postdoc experience required; 5 year fellowship

- In September 2015, applied again for an STFC Rutherford Fellowship.
- Feedback from R1 was harsh (just some excerpts here):
  - *"The stated goal of the proposal is just not achievable"*
  - *"I consider the proposal fundable, but the applicant not fundable."*
  - *"I personally think that it would be worth dropping the study for the LHCb upgrade."*
    - The study was relevant. Now, work started on this elsewhere.
    - At least, I could help make their simulations more accurate.

Rutherford Fellowship 2

Applied for £479k; 23 pages (including 3 page proposal + publications, outreach, impact, CV, Lay report)
2 years of postdoc experience required; 5 year fellowship

- R1 had some good things to say about my proposal.
  - **The bad things though, put doubt in the panel's mind.**
- R2: *"The candidate has a strong track record in charm physics, having been convener of the CLEOc charm group"*
  - *"He also has a (fairly minor) leadership role in LHCb"*
  - *"The main weakness of the application is in the scientific proposal."*
- R3: mentioned me by name and offered glowing praise
  - *"excellent physicist," "clearly one of the leaders in this field," "Overall this is a very well motivated and coherent proposal."*

Rutherford Fellowship 2

Applied for £479k; 23 pages (including 3 page proposal + publications, outreach, impact, CV, Lay report)
2 years of postdoc experience required; 5 year fellowship

- Took care in my response not to pit the reviewers against each other.
  - Rather I responded to each *specific* criticism
  - *e.g.* my sub-group had 35 members / 16 active analyses.

- *"Your proposal was recently considered for funding and we regret to inform you on behalf of STFC that it was not ranked highly enough to receive funding as there were a number of other, stronger, proposals."*
- Proposal was ranked in the *bottom third* of applicants; no additional feedback was available.
- Learned I needed to address my proposal, maybe took the wrong strategy; also, there really can be a bit of luck involved.

Gripes

- Good, ***specific* feedback** is sometimes hard to come by.
  - Funding agencies get a lot of applications, sure… but I spent a lot of time on these… I can't *improve* without feedback…
- **Reviewers** and results seem *inconsistent*.
  - However, there are different reviewers every year; and the tweaks you make to your proposal *may or may not be well received* depending on the reviewer (even if *local* feedback is very positive).
- It takes a lot of *time* to **prepare** these applications
  - Which makes me *wonder if I was better off doing other work* (or maintaining a more healthy *work-life balance*, at times) instead of writing 20-page research proposals…

Positive Thoughts

- I was able to *learn* a lot about the **funding process**
  - It is *hard* to convince the public to give you £500k or €1.5M.
- I learned a lot about how to **write funding applications**
  - Make *clear* what your contributions are and take credit for *your* accomplishments, even if you worked with others to get there.
- **Subsequent applications** take *less* time
  - Experience makes writing each application *easier*, although I will admit that getting the courage to make each subsequent application gets harder to find.

My Conclusions

- Start early, START early, **START EARLY**. Seriously, you are already ahead of your peers because you are at this event right now.
- You may still not be sure what you want out of academia at this time, but **pursue opportunities**, if you can, because many are only available to you for brief periods of time.
- The earlier you are in your career, the more funders look for **potential** (key result, early signs of leadership, promising plans) instead of results (leadership roles, long list of publications, perfect plans). **Results** help at any stage of course, but research careers can be *unpredictable*, possibly due to circumstances outside of your control. You *may* go without publishing a paper or positions of recognition for long periods of time, etc… **Sell yourself** when you have successes!

My Conclusions

- Don’t **rest** on existing accomplishments too long.
  - **What have you done lately?**
  - When you have an accomplishment you are marketable.
    - Seek positions, ask for opportunities, and **advertise yourself** (*e.g.* give seminars) then.
- **Create your own opportunities**
- Leave the reviewer saying “**this proposal is ambitious, but if anyone can do it**” *you* can.

My Conclusions

- Don’t expect *anyone* to **champion** you.
  - Make it widely known that you are **serious** and on the scene.
  - If someone does champion you, keep that contact as a **mentor**.
- **Network!** It matters!
  - A former collaborator looked to recruit me for a higher position.
    - I chose not to apply due to personal constraints.
    - Rewarding to know that I was “good enough” to consider for a role that involved an opportunity to lead a research group.

Other Thoughts

- There is certainly **no shame** in no longer wanting to progress or changing fields.
  - Topics for another event.
  - I am still in this "game" because **I feel confident that I could have an impact on the future of particle physics and lead a meaningful research program at a top research university**.
    - That view may *change*, and that's **OK**.
- *You* have to decide when you are willing to tilt your *work-life balance* in one direction or another.
  - For some people it's not worth it, and even unhealthy. Choose wisely.
  - Others manage it all without any difficulty; don't compare yourself to these people if that's not *you*! **Keep learning**, you can succeed with **grit**!

Other Thoughts

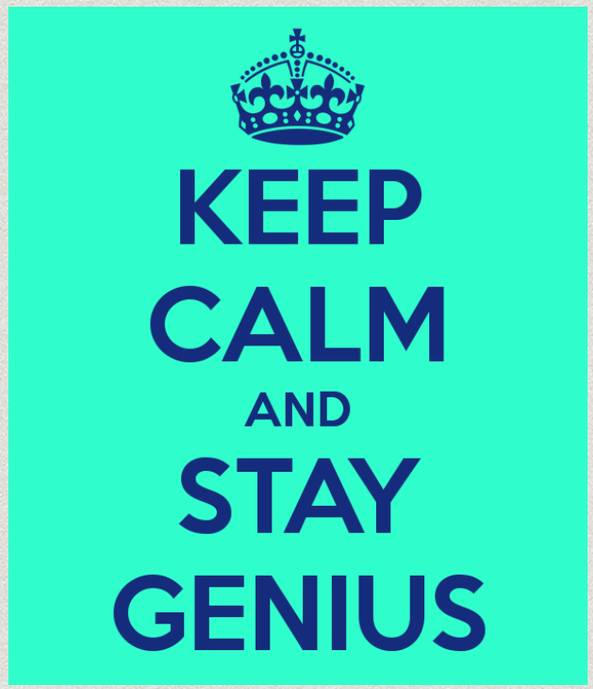
- If able, be **willing to move** for new career opportunities.
  - Fear that you will end up in the shadow of your advisor.
  - Must justify your choice of institution
    - How can you leverage your relationships there?
  - New challenges and opportunities may not become available at your current institution.
- Enjoy your **holidays**! Make **time** for people that are important!

Final Thought

- While working for the University of New Hampshire as a lecturer, Yitang Zhang, nearing 60, submitted an article to the Annals of Mathematics in 2013 that established the first finite bound on gaps between prime numbers, leading to a 2014 MacArthur "Genius Grant" and his appointment as a professor.

- “There are a lot of chances in your career, but the important thing is to keep thinking.” - Yitang Zhang

Resources



- Vitae
  - https://www.vitae.ac.uk/
- University of Bristol research staff hub
  - http://www.bristol.ac.uk/staffdevelopment/academic/researchstaffhub/