

# Career Development Forum

*Part II:*

How to Land a *Faculty* Position

(for postdocs, and an early sneak peek for grad students...)

**Keith R. Dienes**

University of Arizona



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The opinions and conclusions expressed herein are those of the speaker, and do not represent any funding agency.

# Congratulations!

You've just begun your first postdoc.

**Postdoctoral positions will give you a 100% concentrated experience with real, hands-on research. The postdoctoral experience can lead to many possible future careers, e.g.,**

- Faculty positions at **research universities**
- Faculty positions at **liberal-arts colleges and other teaching-intensive, primarily-undergraduate institutions (PUI's)**
- Scientific research positions in **industry**
- **Non-scientific positions** that require independent analytical and/or computational skills (e.g., finance).

**What you're seeking should guide your expectations and goals for your postdoctoral experience.**

***This talk:*** focus on faculty positions at research universities.

(if time, brief comments on PUIs as well)

Most people aiming for research-university faculty positions do between one and three postdocs.

- Each postdoc position typically lasts 2-3 years.
- Thus, 2-3 postdoc positions can last from 4-9 years!



**You could easily spend a good fraction of a decade as a postdoc!**

(Not to mention the half-decade you already spent in grad school.)

**How can you steer your career during this critical period in order to increase your odds of successfully landing a faculty position?**

First, you need to understand what you're facing.  
Two critical aspects...

- The job market for faculty positions in HEP theory
- How the hiring process takes place (what are *they* looking for?)

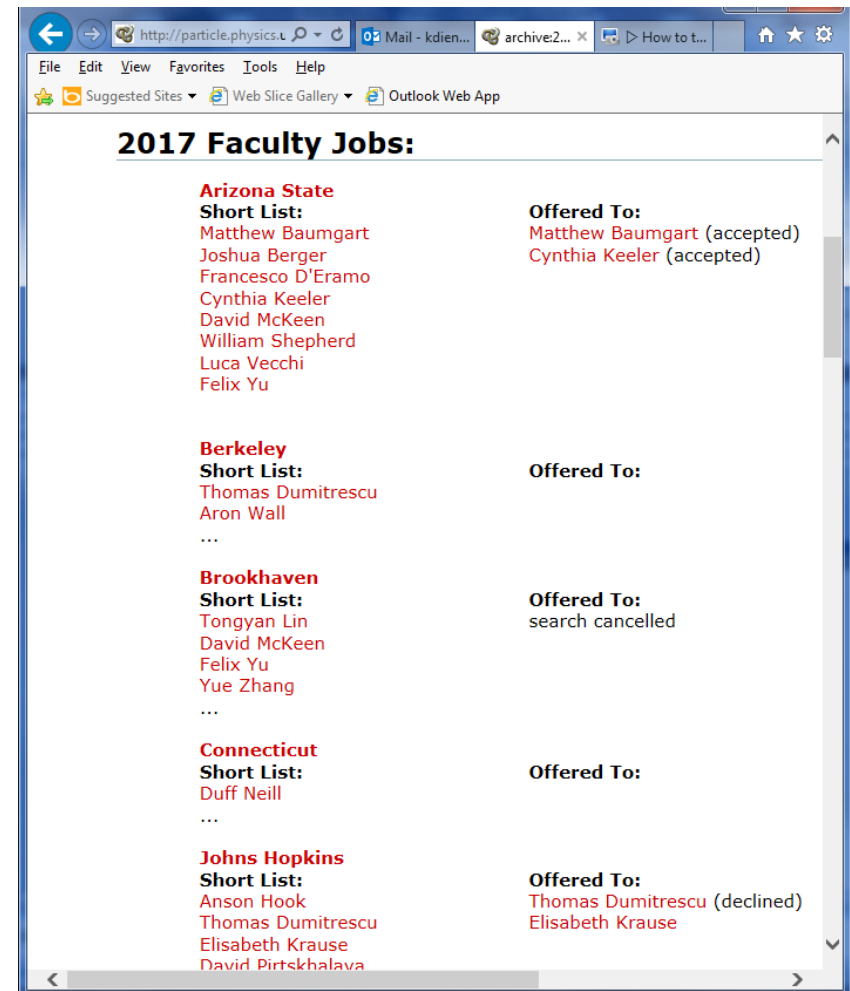
**Understanding these realities tells  
you how to position yourself!**

# The Job Market

(HEP Theory, US/Canada only, mostly Research Universities or National Labs)

## Not like the postdoc job market!

- Only about **25** positions advertised each year across the entire US/Canada
- Many positions go unfilled
  - First offers declined
  - Search cancelled by Dept or Dean



The screenshot shows a web browser window with the following content:

**2017 Faculty Jobs:**

Institution	Short List	Offered To
<b>Arizona State</b>	Matthew Baumgart Joshua Berger Francesco D'Eramo Cynthia Keeler David McKeen William Shepherd Luca Vecchi Felix Yu	Matthew Baumgart (accepted) Cynthia Keeler (accepted)
<b>Berkeley</b>	Thomas Dumitrescu Aron Wall ...	
<b>Brookhaven</b>	Tongyan Lin David McKeen Felix Yu Yue Zhang ...	search cancelled
<b>Connecticut</b>	Duff Neill ...	
<b>Johns Hopkins</b>	Anson Hook Thomas Dumitrescu Elisabeth Krause David Pirtskhalava	Thomas Dumitrescu (declined) Elisabeth Krause

Google "HEP Theory **Rumor Mill**"

# Some statistics

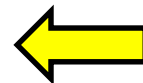
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In the past 13 hiring seasons (2009-2021), only **143** people have been lifted out of the postdoc pool into tenure-track faculty positions!

 Average is approx. **11** per year across the entire US/Canada !

But recent trends are positive!

- 2009-2017: average = **9.7** / year
- 2018-2021: average = **14** / year



44% increase, and this includes two pandemic seasons!

# The hiring process

What are *they* looking for? Just a few salient comments...

## Not like hiring a postdoc!

- A [postdoc search](#) is usually conducted by a single professor or a HEP theory group whenever they have sufficient grant funds. One typically seeks a qualified candidate working on interesting physics, one who might also collaborate with the local faculty and perhaps even mentor senior grad students over the next 2-3 years.



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- A postdoc search is usually conducted by a single professor or a HEP theory group whenever they have sufficient grant funds. One typically seeks a qualified candidate working on interesting physics, one who might also collaborate with the local faculty and perhaps even mentor senior grad students over the next 2-3 years.
- By contrast, a faculty search is usually authorized by a Dean and will likely involve an entire Department collectively. The Search Committee will involve HEP theorists, but will also typically have faculty from other fields and also certain faculty to evaluate teaching. **A given University may have a faculty search in HEP Theory only once in a decade, or less!** The person hired will likely even outlast the Search Committee.



**The University is therefore seeking not only a research star, but also one who is capable of being the intellectual leader and manager of his/her own research group.**

## *This means that you will be expected to...*

- Perform first-rate, cutting-edge research
- **Guide** the research of graduate students and postdocs  
(i.e., you're not just a researcher but also a research *manager*)
- Successfully compete for **external grant funding**
  - Need to understand the funding landscape in our field
  - NSF, DOE, NASA, private philanthropic foundations (Sloan, Research Corp., Simons, ...)
  - Regular grants, CAREER-type grants, other specialized grants
  - Traditional HEP-theory research areas, new emerging areas (HEP interfacing with Astro/Cosmo, QIS, AI/ML, ...)
  - Not only intellectual merit but also broader impacts (esp. NSF)
  - And then know how to *build* a successful grant proposal
- Successfully **teach** at all levels of the physics curriculum
- Perform Department and University **service**  
(i.e., be an engaged member of not just a research group but an *entire Physics Department*, with a broad willingness to contribute to the entire University enterprise and goals)

... and increasingly this means that you should also be able to contribute meaningfully to the University/Department's DEI mission

**D = Diversity**

**E = Equity**

**I = Inclusion**

Want to indicate that you

- Are *aware* of the issues
- Are *sensitive* to the issues
- Follow the current discussions
- Have engaged in (or are capable of engaging in) meaningful efforts to promote change

**Depending on the particular University, this may be a big component of your job interview and evaluation. Consider this an important part of your preparation and training, since it will be a fundamental part of your future life as a faculty member.**

**If you make it onto a short list, you will be invited to campus and undergo extensive interviews throughout the Department.** You will also probably give a Dept-wide Colloquium and/or research seminar, and may even be asked to teach a class. You will probably meet with the Dean, and you may also meet with committee(s) of grad students and/or undergrads, all of whom will relay their impressions to the Search Committee. **Even when you are taken to lunch and dinner, you are still being observed and evaluated as a potential colleague!**

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**Always bear in mind:** A typical faculty search brings 200 applications or more. Because there are so few faculty positions available in a given year, ***most research universities (regardless of their own rank) usually feel that they can pursue the absolute best people with a reasonable chance of actually getting them!*** They are not usually deterred by competition from other places.

For all of these reasons,

- This process is crazy competitive!
- You need to rise to the point where you start getting on faculty short lists.

**.... and that only happens when your reputation and visibility have risen to the point that people in the community consider you “*faculty material*”... i.e., when you are considered one of the top young people in your research area.**



Tao Han in 2014



We're probably going to have a search next year in Pittsburgh. Who are some of the best young BSM phenomenologists out there these days?



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**Yes, it really does work this way, and such conversations really do happen --- even before the job is announced!**

**Sometimes you'll even hear about it yourself....**

***Psst!*** Hey Brian, I was just speaking with Tao Han at this year's PHENO conference (which is of course the most important annual conference in our field). Seems like Pittsburgh will be having a search next year. Be sure to apply!

# So if that's the destination, how do you get there?

## Make the most of your time as a postdoc!

- No Ph.D. advisor to answer to
  - you steer your own career!
- No teaching or service obligations
- **100% of your time is spent on research**
- You even have a travel budget for workshops, conferences!

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View this period as your **audition** .

This your chance to show what you are capable of and build your career.

**This is also your chance to build a network of supporters (letter writers in the community who will support your faculty candidacy) --- need not be limited to people who hired you as a postdoc or whom you've worked with!**

To do this, you need to successfully navigate a **transition...**

Apply for  
first postdoc

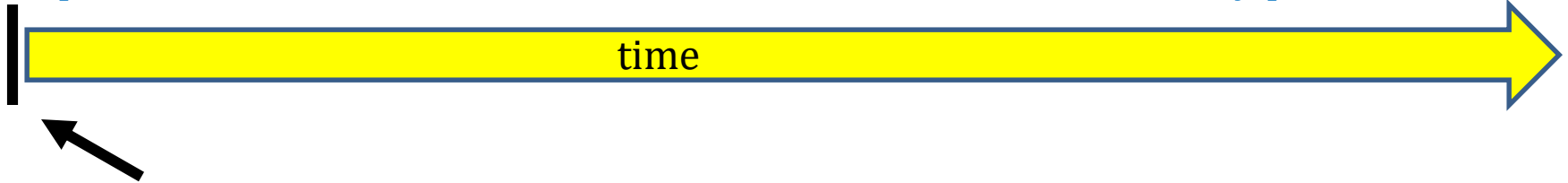
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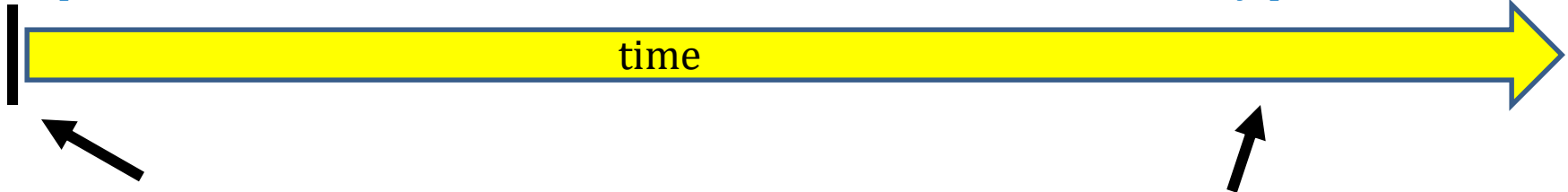
- You are closely identified with your Ph.D. advisor
- **You are almost completely unknown, but you are hired on the strength of your letters**
- You are pure **potential** --- it's all about what you might be capable of doing in the future.



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- You are viewed as an **independent contributor** in the community
- You may even be associated with certain **major pieces of work** you have produced.
- You are seen widely giving talks at conferences, accepting seminar invitations, etc. **Every talk is a job talk.**
- You have an established research profile and momentum. **Potential has become kinetic!**

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**However, if you are already getting on short lists, this is your clue that you are probably among the top 10-20 faculty candidates in the postdoc pool in your research area. In that case, sustain your research momentum and keep applying --- the odds are on your side!**

# If you're aiming at liberal-arts colleges and other PUI's...

- **The emphasis is different: Research is important, but teaching is primary!**
  - You should simultaneously also develop a track record in teaching!
  - Volunteer to teach classes --- keep copies of student evaluations, teaching methodologies and innovations, peer evaluations
- **Seek extra training opportunities** for teaching, teaching certificates, etc.
- **Plan and develop ideas for undergraduate research!** Be prepared to show how undergraduates can do meaningful research with you.
- **Understand that you will not have graduate students and postdocs.** Develop a network of external collaborators that can help maintain your research momentum despite your heavier teaching load.
- **This needs to be a sustained, credible effort.** Your desire to work in a PUI needs to be an organic one rooted in your own priorities and interests. *Do not view such positions as backups* --- this dangerous and misinformed belief does a severe disservice to the unique character of PUIs and to the unique responsibilities and opportunities that such faculty positions provide. Search Committees will sense this. **Therefore, if you are not committed to this kind of position, do not apply!**

# Good luck!

Questions?

