Researcher Career Pathways

Prof Dr Carsten P Welsch

Early career researchers

- Report: *The Global State of Young Scientists* by the Global Young Academy, on early career research scientists working in 12 countries who obtained a PhD up to 10 years ago
- **Found long hours, job insecurity and lack of resources.**
- **Most interviewees did not hold a permanent position in academia.** This insecurity drove them to work long hours and weekends to stand out.
  Early career researchers **work an average of 55 hours a week.**
- Common problems worldwide: **having to build a laboratory from scratch**, **uncertainty over funding** necessary to secure future positions, and lack of resources and research staff.
- **Job insecurity was a key concern** in **Europe**, where fixed-term positions are the norm for early career researchers: 83% of respondents.
  Despite this, two-thirds of respondents said that they felt hopeful about their career prospects.
- Researchers' **confidence in finding a permanent research position** varied worldwide. Respondents in **America** thought their chances were 66%, whereas in Europe put chances at just 35%.
  Confidence in finding a permanent teaching position was only 39% in Europe.
- Scholars said that **more support and mentoring** during the early stages of their career was required, particularly at transition points such as starting a family. "In Europe in particular, the lack of mentoring was perceived as a barrier, leaving young scholars to their own devices in a fairly unstable higher education labour market, with only limited chances for job security.
- Research organisations "**need to adapt to the realities of women and family issues**".

ECRs lack realistic career expectations

- Careers organisation Vitae has warned that research staff **do not have realistic expectations of their long-term career prospects** and lack knowledge about careers in other areas.
- According to the Careers in Research Online Survey, which surveyed 9,000 researchers from 72 institutions and was published on 8 September 2015, 77% of respondents wanted to have an academic career in the long term. Of these, 34% want a pure research role and 43% want a combined teaching and research role.
- The survey echoes findings from a Royal Society report published in 2010 that said that **only about 3.5% of science PhDs achieve a long-term career in academia**, while about 80% end up dropping their research aspirations altogether.
- Janet Metcalfe, chairwoman of Vitae, says that by the time people finish their PhD studies, and are looking for a permanent job in academia, they have invested an "extraordinary amount of themselves" in the idea of being an academic. "Psychologically it is very difficult for them to step back and recognise that that is not going to happen," she says. For many people, finishing a PhD but failing to become an academic is still seen as a career failure. "Everything else is a plan B
- Vitae's report says that universities have an important role providing research staff with access to information about a wide range of career opportunities. "It would be very helpful if universities would make very clear the variety of options available for somebody being successful in a PhD." Researchers who are frustrated with their job prospects could undertake a career audit, she says, which would help them identify barriers to achieving their goals, as well as the potential risks and benefits of continuing to pursue an academic career path.

Careers in Research Online Survey 2013

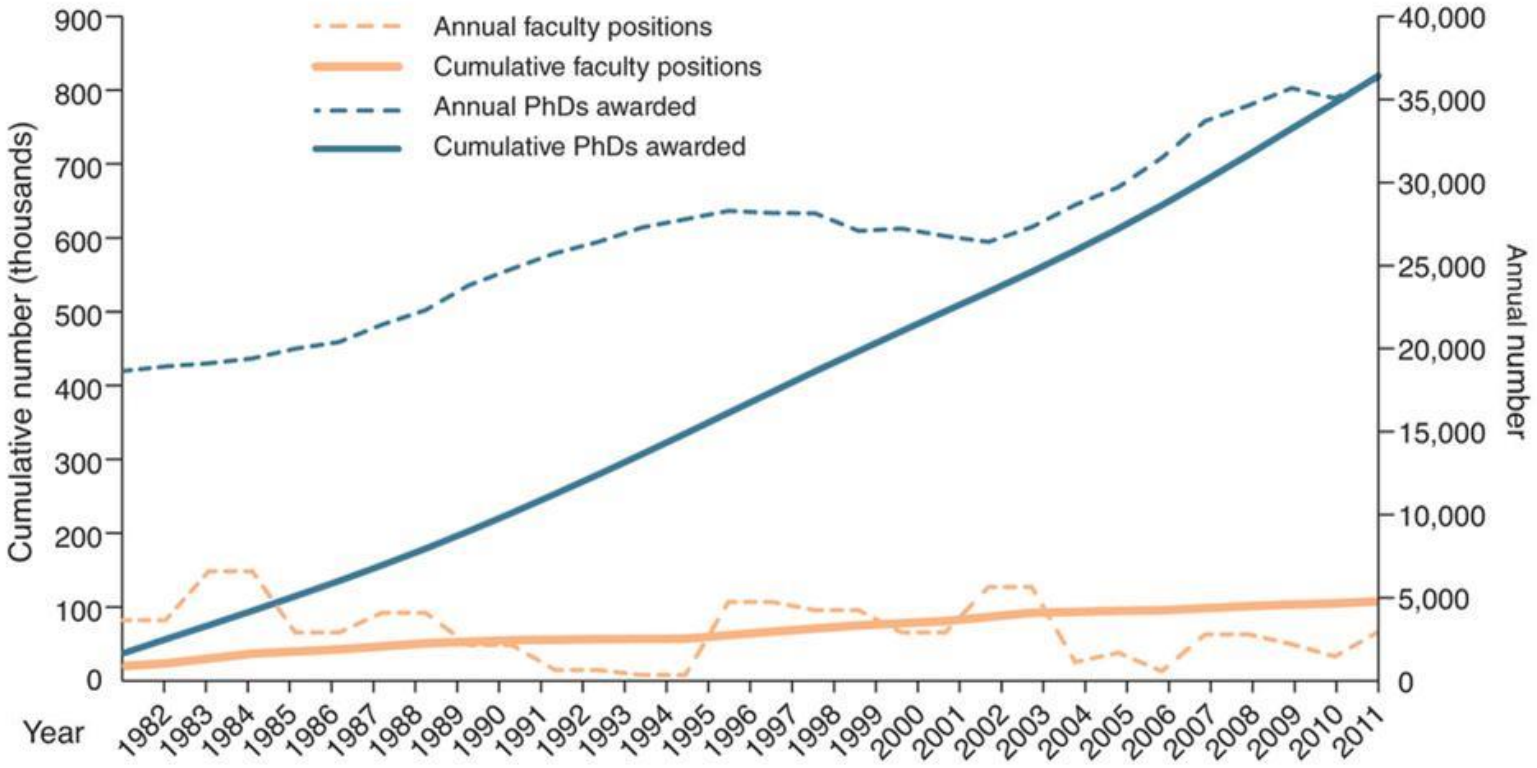
- Sought to find out more about opportunities for researchers to get involved in activities such as collaboration, knowledge exchange, supervision, teaching and mentoring.
- *"significant credibility gap"* between researchers' expectations and the likelihood of their forging long-term careers in higher education. A career in research was very competitive but *"researchers do not all have a full awareness of quite how competitive [it is]"*. Read the full story
- Over 65% of researchers have had **experience of collaborating with colleagues outside of the UK and with external organisations.**
- Only around 50% had **experience of mentoring, teaching or writing a funding proposal** - although a 2013 survey shows that research publications still tend to override other research-related activities in the biosciences.
- **Perceptions of fairness in the treatment of contract research staff compared with other types of staff**, 50% of both males and females believed they were not treated fairly. This figure rose to 64% for researchers who had been on five or more contracts.
- **Career ambitions of researchers**: clear disparity between the aspirations vs realistic expectations of researchers. Although three quarters would like to have a research and/or teaching career in academia, only two-thirds believed this was likely to happen in reality. This lack of opportunities is true of other intellectually stimulating professions. 2/3 or ECRs believe they will actually achieve a research/teaching career, according to Vitae the number of researchers who DO achieve it is closer to 1/5.
- A **lack of engagement with careers support** at the doctoral and postdoctoral levels, either out of choice or because such support does not exist.

More PhDs than academic posts available

www.linkedin.com/today/post/article/20131014180817-2434720-the-value-of-formal-education-in-career-success

Since 1982 in the USA, 800,000 PhDs were awarded in science and engineering, whereas only about 100,000 academic faculty positions were created. Source: http://goo.gl/Yl0g1y

Consider therefore also non-academic options: managing people, research in industry, analysing data etc.



DITANET

(Beam Diagnostics, Physics)

21 Fellows

LANET

(Laser Applications, Engineering)

19 Fellows

OPAC

(Accelerator Optimization, Physics)

23 Fellows

OMA

(Medical Applications, Life Sciences)

15 Fellows

AVA

(Antimatter R&D, Physics)

16 Fellows

Driving question: How to provide best training ?

Basis for a good career – a recipe

- Get world-class education;
- Provide evidence of your excellence *(e.g. degree marks);*
- Obtain a broad and interdisciplinary training – beyond what the academic sector offers;
- Gain relevant work experiences;
- Build up a strong and international contact network.

Researcher Careers after the PhD

- Is a PhD worthwhile?
- Skills gained on a PhD
- What do employers look for in postgraduates?
- What do PhDs do after completion?
- What jobs are there outside research?

Based on: Bruce Woodcock, U Kent

Is a PhD worthwhile?

Sutton Trust Report

- The proportion of people of working age in Britain with a postgraduate qualification has climbed rapidly:

  4% in 1996
  11% in 2012

- **PhDs obtained in the UK**

  1994-5 7,500,
  2012-13 21,000 (Source HESA)

- 72.9% of PhDs will obtain it within 7 years of starting but at London Met. University only 12% will complete in 7 years !

  (Source HEFCE)

- The study found a **postgraduate degree** remained linked to higher earnings: **worth on average £5,500 per year more than someone with only an undergraduate degree**.

Question

What skills do you gain on a PhD that you could "sell" to employers?

Research as your main (?) focus: Career in Academia

Prof Dr Carsten P Welsch

Undergraduate Degree

GSI

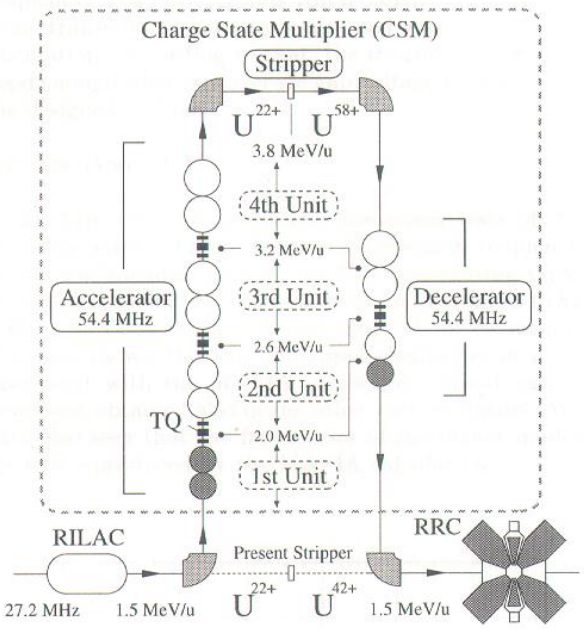
HELMHOLTZ | ASSOCIATION

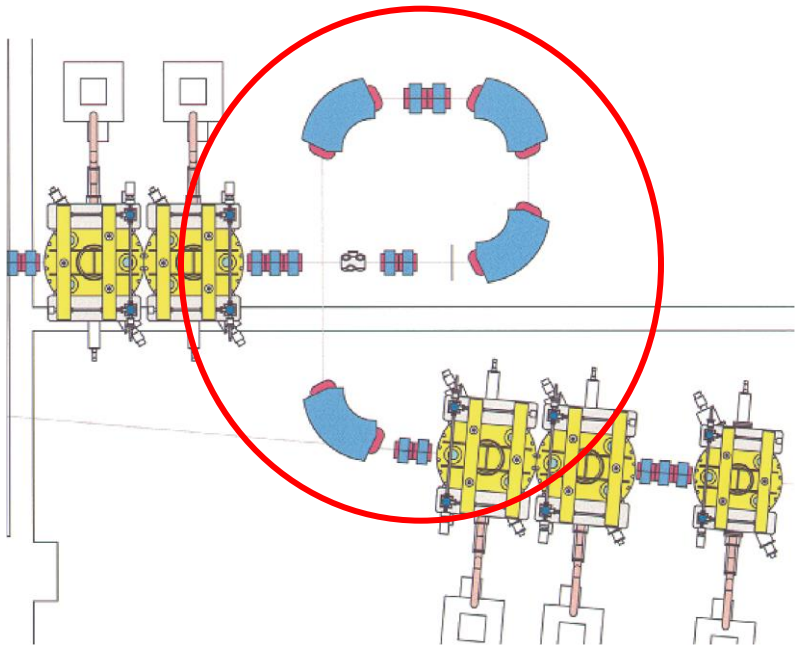
spiral-loaded cavities

RIKEN

3 months

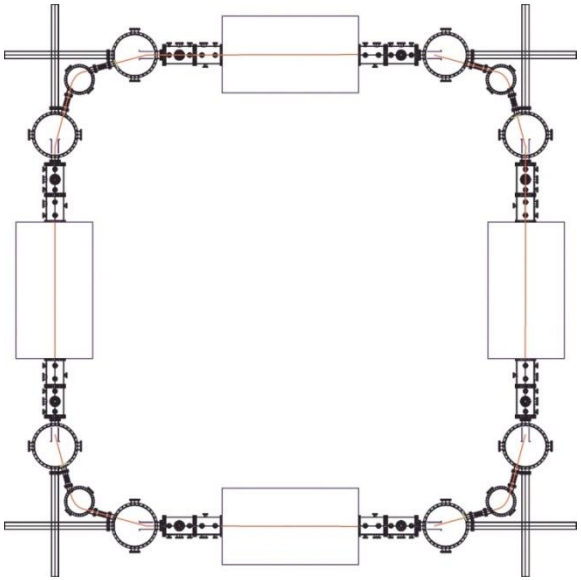
日本

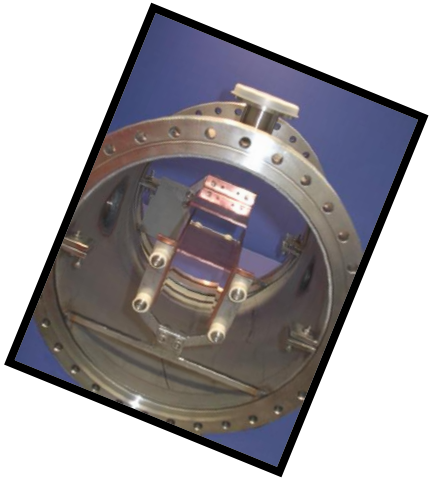


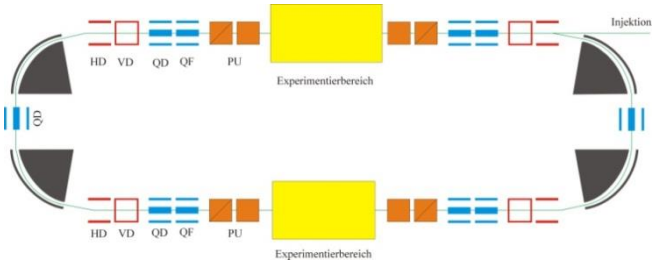


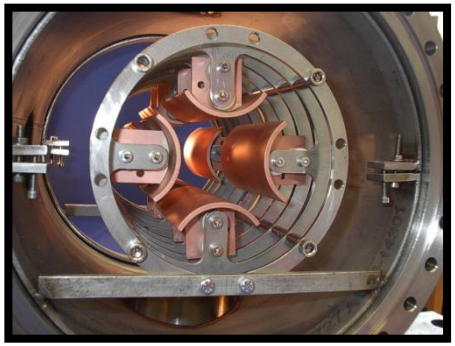
Layout of magnetic chicane for CSM project

PhD Degree and Economics

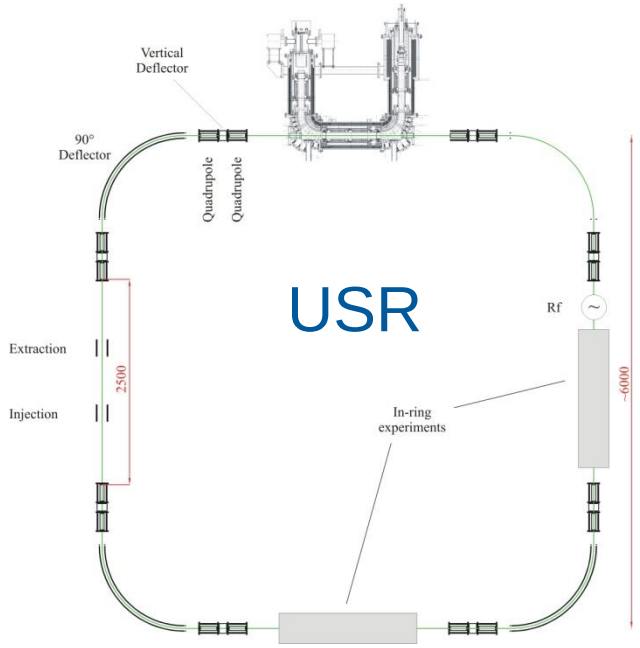








2 Postdoc Years



1 of 2 technical project leaders

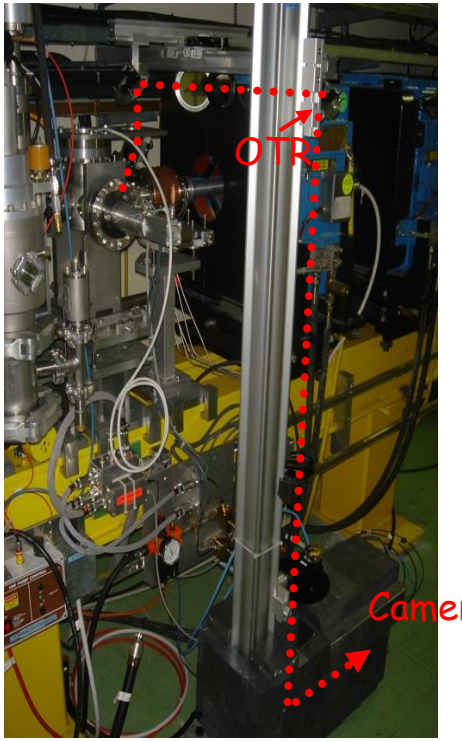
Contributions to CSR project

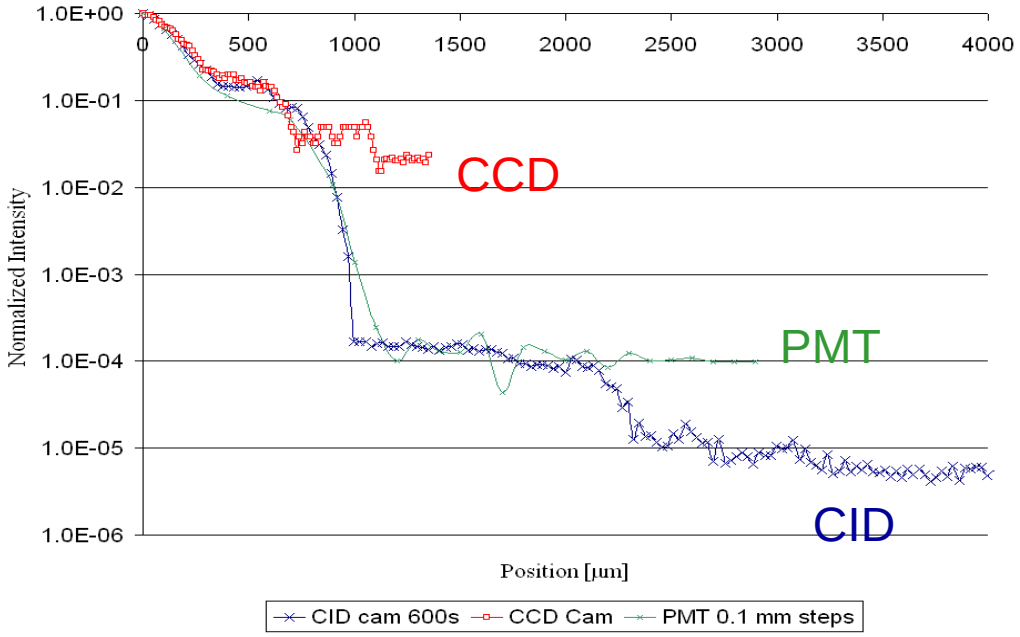
(XHV system layout, beam dynamics, cryogenic trap, design prototype, etc.)

International visibility: FLAIR

LoI, TP editor, strong interactions with GSI

CERN Fellowship





Group Leadership

SiPM

DITA-IIF

BeaPhy

DITANET

LANET

APCT

OPAC

GSI

HELMHOLTZ
ASSOCIATION

CERN

The Cockcroft Institute
of Accelerator Science and Technology

Additional Qualifications

THE INSTITUTE OF LEADERSHIP & MANAGEMENT

SEB
More than a bank

Studienstiftung des deutschen Volkes

Technische Fachhochschule Berlin
University of Applied Sciences
Fernstudieninstitut

Zertifikat

Fachbereich Wirtschaftswissenschaften

Zeugnis der Diplom-Vorprüfung

Higher Education Academy

HDZ Hochschul Didaktik Zentrum Universitäten Baden-Württemberg

a suivi quatre cours de français / *has followed four French courses*

05F72B / 05F78C
(français, langue générale et professionnelle, niveau avancé)

06FE1B / 06FE2C
(français écrit, langue professionnelle)

Guide officiel du CERN
Official CERN Guide

This does not stop !

What does an Academic do ?

Research

- Driver: Blue sky and/or applied research;
- Freedom: Choice of research topics;
- Two worlds: Research and teaching;

Teaching

- undergraduate: lectures, workshops, tutorials;
- postgraduate: research projects, advanced lectures, schools, workshops

Administration

- Own projects (budget, equipment, reports, PR, IPR, etc.)
- Self, students, researchers, group, institute, department, school, faculty, etc.

Hugely diverse skills set needed

- Academic/teaching skills
- Project leadership
- Team leadership
- Grant writing
- Budget management
- Time management
- Presentation skills
- Outreach (media interaction, event organization, etc.)
- Industry-relevant skills *(IPR, patent law, commercialization strategies, market overview, etc.)*

Salary Prospects

1.	Switzerland	126 – 159kCHF	150 – 180kCHF
2.	Australia	150 – 180 AU$	195-210kAU$
3.	Netherlands	4.8-9.4k€	5.4-9.4k€
4.	UK	45-60k£	70k£
5.	Denmark	45kDKK	60kDKK
6.	USA	80k$	105k$
7.	Finland	3.4-5.6k€	4.6-8.7k€
8.	Canada	100kCA$	130k€
9.	Germany	60-75k€	70-85k€
10.	France	25-54k€	37-74k€

Source: google search

How-to Guide: Academic Career Path

- Cutting edge research;
- Demonstrated R&D leadership *(publications, invited talks, etc.);*
- Establish international collaboration network;
- Attract funding;
- Be lucky with the timing.

What are the challenges in Academia ?

- Career planning: Work contracts;
- Time constraints: there is never enough time !
- Be the best…in everything (R&D, impact, teaching, communciation and outreach, etc.) – one of most stressful jobs with constant high pressure
- Support I: Professional (?) services;
- Support II: Funding !!