

Challenges and Opportunities in Early Career Academia

Roundtable session

Retreat for Women in Applied Mathematics, 13-17 Jan 2025

Ellen Luckins¹ and Karen Meyer²

¹University of Warwick

²University of Dundee

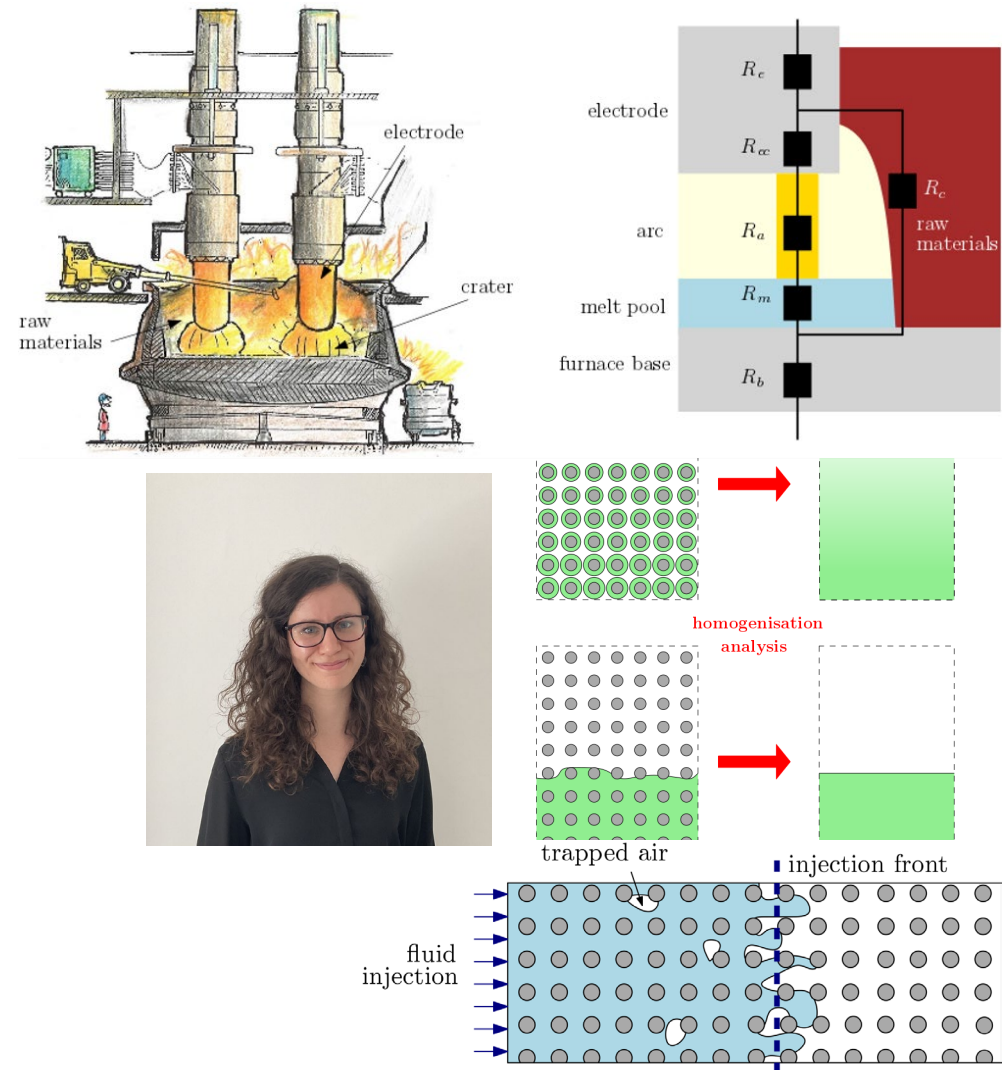
Outline

- Our career paths so far
- Academic jobs after your PhD
- Conferences and Networking
- Funding and Fellowships
- Wrap-up

Aim: share constructive, practical advice

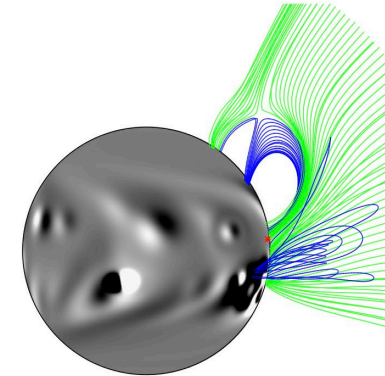
Ellen Luckins

- PhD: Oxford Maths, InFoMM CDT (2017-2021)
 - With Elkem – a Norwegian silicon producer
 - Modelling electrical, chemical, heat and mass transfer in a silicon furnace
- Postdoc: Oxford Maths (2021-2023)
 - Modelling filtration and decontamination
- Warwick Zeeman Lectureship (since September 2023)
 - 3-year job “at Assistant Professor level”
 - Reduced teaching load (1 module per year, some tutees)
 - Leverhulme ECF (start September 2024)
- Research interests:
 - Continuum/fluid mechanics, industrial modelling, asymptotic methods, porous media flows, chemical reactions and phase change

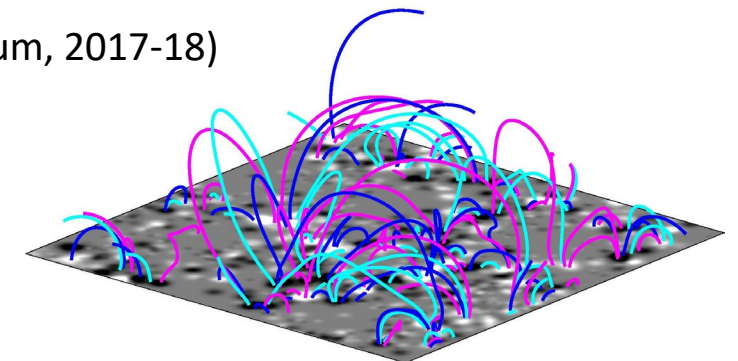
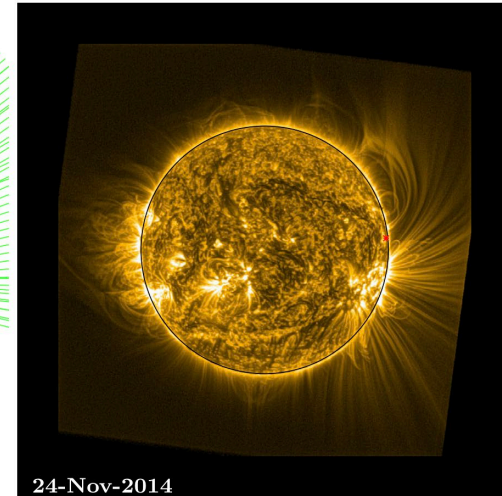


Karen Meyer

- PhD: University of St Andrews (2008-2012)
 - Applied Mathematics (Solar Physics)
 - Modelling the Sun's small-scale magnetic field
- Postdoc: St Andrews (2012-2014)
 - Continuing PhD work
 - Lecturing experience
 - Supervision of undergraduate summer research project
- Lecturer in Mathematics: Abertay University (2014-2020)
 - PhD student
 - Carnegie Research Incentive Grant (£6143, 2017)
 - PROBA-2 Guest Investigator Program (3 x 2 week collaborative visits to Royal Obs. Belgium, 2017-18)
 - Scottish Crucible and Aurora leadership programmes (2016, 2019-20)
- Lecturer in Mathematics: Dundee University (2020-present):
 - STFC Consortium Grant (~£480,000, 2022-2025)
 - 2 PhD students and 1 PDRA




24-Nov-2014





Types of academic job

Increasing
seniority



Teaching focussed

- Lectureships at colleges (esp Oxbridge) with a set no. of hours per week (often stitch several together)
- Fixed-term teaching fellowships

Research focussed

- Postdoctoral Research Associate/fellow (PDRA, postdoc) on a PI's grant
- Independent fellowships:
 - Junior Research Fellows (JRFs) at Oxbridge colleges
 - Universities' fellowships: Clifford (UCL), Chancellors (Edinburgh), Chapman (Imperial), Hooke (Oxford), Zeeman (Warwick)
 - Externally funded (1851, EPSRC, Marie Curie, Leverhulme, Royal Soc URF)
 - Spec: Dorothy Hodgkin Fellowship

Assistant Professor/Lecturer (permanent)

Associate Professor/Senior Lecturer

Reader

Professor

Types of academic job

Alternative routes

- **Impact focussed** eg: Innovation Research Associates (InRAs) at Bath, Warwick, Edinburgh, Cambridge, Oxford,...

Overseas:

- Visiting assistant professorships (US)
- National Labs (US)
- Research Institutes (eg: Europe)

Where to look for academic jobs?

- Jobs.ac.uk
- Mailing lists eg: UK Fluids Network
- University/college webpages (especially for JRFs etc)
- Academics' webpages and LinkedIn
- Funders' webpages
- Many Uni's offer help applying for external funding/fellowships

Application process (eg: for a postdoc)



Documents

CV and publication list
Cover letter – refer to the job criteria
(Research statement;
teaching statement; ...)
References



References

Usually 2-3. Ideally ask people who:
(i) know you well
(ii) are respected/established in the field
(iii) are from a variety of institutions or countries
Send referees your application documents,
any important things for them to mention



Interviews:

Technical and/or non-technical
Research talk/seminar
Teaching demonstration

Academic jobs: Discussion

Starter questions:

- What do you look for when hiring a postdoc?
- What types of questions asked in a postdoc interview?
- Where else are postdoc opportunities advertised?
- What to do during a PhD to make yourself a strong applicant?

- How many different jobs/years as a postdoc before getting a permanent job?
- How many papers should you be publishing?
- Should you move institutions?



Why go to conferences?

Maybe:

- To share your research with the community
- To learn about other work in the field
- To build a network that will help you through your career
 - Peers – other students, postdocs
 - More senior academics – a future supervisor/mentor/reviewer/collaborator/employer?

Presenting at a conference

Always a good idea to present – easier for people to know who you are and what you do

- Poster:
 - Make it eye-catching and easy to digest (not a wall of dense text and equations!)
 - Prep a 2 minute introduction
 - Stand by your poster and chat with people
- Talk:
 - Judge your audience
 - Tell a story
 - Practise
 - Keep to time!

Conference networking tips

Before

- Prep a 30s “elevator pitch” to explain who you are and what you do
- Plan who you want to talk to/what sessions you want to attend

During

- Say hello to someone new (you don't have to talk about maths!)
- Ask a question after a talk

Afterwards

- Make some notes on who you spoke to/what about
- Follow up – drop them an email/add them on LinkedIn/ask them if they can share their paper/slides etc

Conferences and Networking: Discussion

Starter questions

- How many conferences should you go to each year?
- What's a good conversation starter?
- What other (non-conference) networking opportunities are there?

Funding and fellowships



Why apply for money?

Obvious:

- To travel/go to conferences/realise impact/do something cool
- To fund yourself or a student

Also:

- To practise explaining why your work is important/valuable/worth funding
- For the application experience
- For CV points!

Funding pots – projects, events, travel

- Institute of Mathematics and its Applications (IMA)
- London Mathematical Society (LMS)
- Edinburgh Mathematical Society
- Society of Industrial and Applied Mathematics (SIAM)
- Isaac Newton Institute (INI)
- ICMS

- Your university:
 - Impact Accelerators,
 - Pump priming
 - Travel
 - Undergraduate summer projects

Postdoctoral Fellowships

- LMS Early Career Fellowships (3-6 months post PhD)
- EPSRC Doctoral Prize (1-2 years post PhD)
- Royal Exhibition of 1851 (3 years)
- EPSRC Early Career Fellowships (3 years)
- Leverhulme Early Career Fellowships (3 years, half funding)
- Royal Society University Research Fellowship (8 years)
- Royal Society Dorothy Hodgkin Fellowship (8 years, flexible working pattern)
- ...

Applying for a fellowship

- Like applying for a job:
 - Online application form
 - CV or details of your previous achievements, publication list
 - Referees
 - **Research proposal**
 - **Budget**
 - **Statements about Research Integrity, Equality/Diversity, Career Development, Impact**
 - Go out for review, go to a panel, maybe an interview
- Vary significantly in length of application
- Similar to a grant but a fellowship is about YOU rather than just the PROJECT

Writing a research proposal

A research idea that is

- Interesting and important (to who?)
- Novel and original
- Builds on the state-of-the-art
- Different to your PhD (but can be related)
- You are the “ideal” person to do it (skillset and experience)

Who will you collaborate with?

- At your institution? Elsewhere in the UK or abroad?

What will your outputs be?

- Papers; conference attendance;
- Code? Software?
- Outreach, engagement?
- Partnerships with industry, government, experimentalists, social scientists,...
- Your own future career – where will this take you?

Keep your audience in mind

- Accessible and clear, but enough technical detail

Get as much advice and feedback as you can

- Supervisor/mentor
- “Research Development Manager” or similar
- Planned collaborators
- Other academics in your area
- Peers

Be organised

- First draft several months before the deadline
- Some Universities will run internal selection months in advance

Funding and Fellowships: Discussion

Starter questions

- Other fellowship schemes?
- How to approach a potential host department?
- What do funders and reviewers look for in an application?
- Any common mistakes or omissions?
- What are the most important factors for success?



Wrap up

Final tips for navigating your “early career”

- Look people up (personal webpages, google scholar)
 - Senior people – what grants have they got/are they hiring?
 - People just further along than you – what career path have they followed? What do they have on their CV? How do they present themselves online?
- Advertise yourself
 - Make a website, talk to people, get involved and help out
- Find your niche
- Ask for help and advice from a variety of sources
 - Supervisor, mentor, peers and friends
- Have a plan (and adapt it if necessary)

Any final advice from the room?