

Jobs for Astronomers (or else: is there life after academia?)

Dr. Ioanna Arka Jobs for Astronomers initiative Garching, May 13, 2014



Outline

- •Who I am (and why I'm here today).
- •Why talk about careers outside academia?
- •Possible career paths ... (and what you could do now to prepare for them).
- •What needs to be done (and what you could do) about it.
- •So now what? Discussion, tips & resources.



A little bit about me...

•Dr. Rer. Nat, Theoretical Astrophysics, MPIK & University of Heidelberg

•Post-Doc in IPAG Grenoble, France (where I decided to leave academia)

Now looking for a career...

 ...and gathering information for Astronomers/Astrophysicists who are (thinking about) leaving academia.



... my current job ...





...and why I'm doing this.

When I made my decision public, many contacted me...

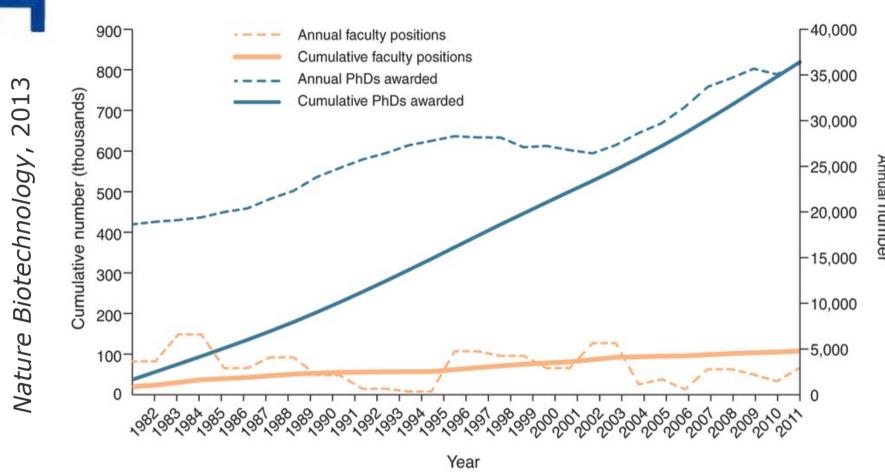
- "taboo" (leaving academia)
- "you're so courageous, to speak out about this" (?)
- "I didn't tell people I left" (the stigma follows you?)
- "tragedies like Ioanna's..." (?)



But, surely, switching from a research career to a non-academic one, is not such a strange thing, is it?



PhDs vs faculty positions



A permanent academic job seems to **be** the *alternative* career after all...



Why do people leave academia?

- Two body problem / family (relocation...).
 - Work-life balance.
 - Unhappy with "the system".
- Can't find an academic job (also on post-doc level).
 - Need for stability.
 - Need for increased income.

• ...



Disclaimer:

The following is by no means an exhaustive list of possible careers...

... but is nevertheless based on the skills and professional preferences of astronomers.



*(you knew this:)*Software developer

- Scientific (research facilities, meteorology, climate science, aerospace, laboratories, engineering, hd simulation, energy ...).
- Commercial (take your pick!).
- Great need for good software developers in virtually every possible field!
- Possibility of working as a freelancer.

- Learn a widely used language (Python, C++, JavaScript).
- Create something you can show (contribute to an open source project, build and maintain a website).
- **Be active** in the community (give advice on stackoverflow.com etc).
- Network! (both on- and offline).

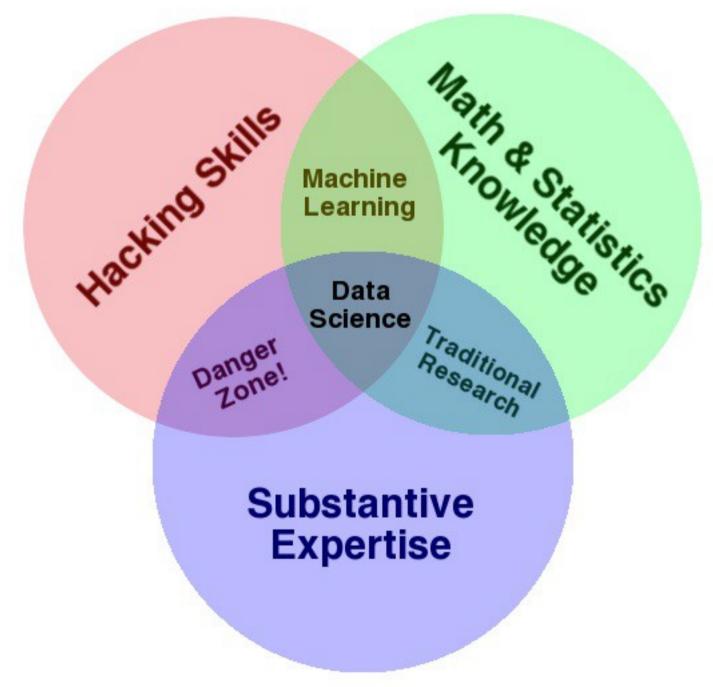


Data scientist

- "Big data" all the hype.
- Astronomers are uniquely suited as data scientists: they know big data, they can assess them according to context and they can explain their implications to diverse audiences.
- Good pay!
- Great demand for good data scientists.

- Learn a statistical package (i.e. at coursera.org).
- Learn a commonly used programming language (i.e. Python, R).
- Brush off your statistics.
- Participate in "data science competitions" (kaggle.com).
- Go to a data science school/workshop or do an internship! (opportunity to learn and network).





Source: drewconway.com



• Work in the **public sector** (policymaking, funding level) ...

- ... or even inter-governmental level (i.e. **UN**, **EU** etc).
- Jobs in **private companies** also possible (i.e. RAND Corporation).
- Other jobs may include/ rely heavily on policymaking expertise, i.e. Science Administration/Management (see next slide).

Science Policy

- Internships at various institutions available (i.e. Stiftung Wissenschaft und Politik, RAND internships, UN Headquarters internship program).
- Be active in collaborations,
 volunteer for outreach
 programs, especially for
 charitable causes.



(Science) Management

- Space & aerospace (project manager, ESA, DLR etc).
- (Scientific)
 administration (fund/grant
 appointing, fund/grant
 appointing/managing at
 different levels, liaison between
 researchers and granting
 agencies, coordination of
 research groups and budgets
 etc for example ERC).
- Relevant to science policy.

- Cultivate
 organisational skills:
 plan conferences, (organise
 venues, book speakers
 etc).
- Coordinate proposals, raise funds.
- Coordinate events (colloquia, meetings).
- Get educated in **policy** (in your desired country of residence).



PROGRAM OFFICER FOR EUROPEAN COLLABORATION

Are you a natural bridge-builder? Do you have experience preparing large funding proposals? Have you ever managed EC projects? Do you have excellent planning, time management & organization skills and do you want to work in a dynamic international scientific environment? Then you can be our new

Program Officer for European Collaboration (f/m)

Job description:

As our Program Officer you will support the General & Scientific Director and the Director of the Radio Observatory/International LOFAR Telescope (ILT). Your job is to support the preparation and submission of major proposals in the European Commission's Horizon 2020 programme and to help build international consortia. You are responsible for the preparation of proposals, and may also be involved in the management of funded projects. General support to the ASTRON directorate is also expected. This will include the generation of reports and papers to the ASTRON Board and to the Netherlands Organization for Scientific Research (NWO).

You will also support the Radio Observatory/ILT Director in his reporting and interactions with the ILT Board. In addition you will focus on broadening the network of the ILT forging new partnerships, seeking increased synergy with other European initiatives and exploring new sources of funding, as well as possibilities to adapt the ILT organization so that its strengths can be used to full advantage within the European radio astronomy landscape. The new European agenda in Horizon 2020 offers many opportunities to build on the experience and strengths of ASTRON and its partners. Your goal is to seek and exploit these opportunities.

Job requirements:

 Preference for a strong background in astronomy, physics, computing or a related scientific discipline



Search Jobs | Submit an Application | CFHT Website | Home

Outreach Program Manager

January 14, 2014 - February 28, 2014

Location: Kamuela, HI

Salary Range: Salary is dependent upon qualifications and experience.

Benefits: This is a regular, exempt position with a competitive, comprehensive benefits package including off-island

relocation assistance and private school (K-12) tuition support for dependent children.

Employment Type: Full Time

Description: The Canada-France-Hawaii Telescope Corporation, which operates a world-class 3.6-meter telescope on Mauna

Kea has an immediate opening for a well-qualified person to lead the expansion and implementation of CFHT's outreach program in a collaborative manner with CFHT staff and others worldwide. Responsible for strategic allocation of outreach resources to ensure maximum benefit and impact toward agreed objectives. Work will focus on local (K-12) outreach, work force development, internship support, enabling outreach efforts in CFHT's partner countries, organizing and supporting tours of CFHT's facilities, and enhancing the visibility of CFHT and ngCFHT. Relevant expertise includes science/technology communications, webpage support,

education, social media, professional document generation, and event planning.

IMPORTANT

Applicants should include in their cover letter their vision for the development of an outreach program in a major research facility like CFHT, noting relevance between their professional expertise and vision and identifying unique opportunities for outreach in west Hawaii.

Note also that only 2 files can be uploaded to an application, so please consolidate your attachments, as necessary.

- Duties: 1. Works with the Director of Science Operations (DSO) to plan and implement outreach activities, applying CFHT outreach resources optimally while working closely with the CFHT staff to conduct outreach activities. Ensures that CFHT staff are kept informed of outreach opportunities and maintains regular communications with outreach counter parts at other Hawaii observatories and astronomy centers. Communicates regularly with DSO on progress and/or problems associated with various outreach activities.
 - Leads strategic planning of outreach program, under supervision of DSO and in accord with agreed toplevel goals of the program with CFHT executive.
 - Outreach responsibilities across Hawaii Island include but are not limited to –



Teaching

- At **schools** (physics teacher).
- No-research teaching positions at colleges (mostly overseas).
- Private tutor (all levels of education).
- Online tutoring (i.e. InstaEDU).
- Science demonstrations for children (at schools, kindergarten, daycare facilities etc.).

- Volunteer now to tutor at your university.
- Stand out: draft your own handouts (and keep them!), write a blog /website for your students.
- Volunteer at a school, i.e. for science demonstrations, as a teacher (after your PhD).
- Teach/give seminars at a VHS.



Science communicator

- Outreach (positions in practically every prestigious astronomical institution – but also look elsewhere in the earth/space sciences!).
- Science writer (i.e. Writer for ESA, NASA, DLR, EGU, your national space agency).
- Coach at planetarium /museum (i.e. Deutsches Museum!).

- ESO scientific journalism internship.
- Contribute popular science articles to a blog (i.e. AstroBetter).
- Volunteer/take initiative: open days, observations for the public, science demonstrations, popular science seminars.
- Volunteer to translate articles (i.e. Science in School).
- Participate in a science writer workshop.







ROYAL ASTRONOMICAL SOCIETY

Advancing Astronomy and Geophysics

Press > News archive > News 2014 > Job vacancies: IT & Information Manager and Education, Outreach & Diversity Officer

NEWS ARCHIVE

Job vacancies: IT & Information Manager and Education, Outreach & Diversity Officer

Last Updated on Monday, 24 February 2014 11:01

Published on Friday, 21 February 2014 14:42

The RAS is currently inviting applications from suitably-qualified individuals for two newlycreated positions, to start in late spring / early summer 2014:

The **Education**, **Outreach & Diversity Officer** will have responsibility for co-ordinating the Society's activity in those areas. This will include public and schools engagement, development of new materials, and the formulation of effective policy. The position is full time, initially on a 3 year contract but with the possibility of a permanent position. Prospective applicants should consult the [2] full job advert.

The IT & Information Manager will have responsibility for the day-to-day running, maintainance and upgrading of the Society's IT systems. This will include computer and audiovisual systems, websites, data management and security, local network, and general IT support. This permanent position is part-time, 3 days per week equivalent. Prospective applicants should consult the full job advert.

Both positions will be based at Burlington House in central London. The deadline for receipt of applications is 17 March 2014 for both positions.



Patent examiner - Patent lawyer

- At European Patent Office or Deutsches Patent- und Markenamt (both have large offices in Munich).
- EPO has a **yearly electronic application process** (English, German and French are required).
- Lab/technical experience is of advantage.
- On-the-job training (2 years for the EPO).

- Legal representation in obtaining patents (often employed in large companies which develop new products).
- Legal training required.
- On-the-job training possible (look for jobs with the title "Patentanwaltkandidat")
- Technical studies *preferable*.



Home → About us → Jobs → Current vacancies → Form Examiner

Online application for the post of patent examiner

Thank you for your interest in working at the European Patent Office.

Please read the following notes before filling in the application form:

- The form is divided into six sections. It will take about 60-90 minutes to fill in. You can save any information you have entered at any stage and return to the form later.
- You can copy and paste your own CV into the form.
- For your security, the information you give will be transmitted in encrypted form and will of course be treated by the EPO as confidential.
- The EPO operates a strict policy of pre-employment screening for new staff. Before the screening process commences, you will be asked to give your written consent.
- Screening is a pre-requisite. Those who do not give their consent will therefore not be considered.

To enable us to establish whether you meet the basic requirements for employment at the EPO, please answer the following questions (further requirements may apply depending on the vacancy in question):

-irst name (Example: Albert)	
Last name (Example: Einstein)	
Nationality*	
‡	
Application to work as Examiner	
Qualifications	
Full university degree	
_anguage skills**	
German	
English French	
Please fill in your key if you have already filed an a please wait 12 months before reapplying for an exa	
Your application will be stored for two years. This perior you receive a reminder e-mail allowing prolongation.	d can be prolonged. After approximately 22 months



Patentanwaltskandidat (m/w) für den Bereich Maschinenbau

personal total

personal total

Member of the HR Consult Group •

Patentanwaltskandidat (m/w) für den Bereich Maschinenbau

Arbeitsort:

München oder Bremen

Ihre Qualifikation:

Sie haben ein abgeschlossenes Studium oder Fachhochschulstudium im Bereich Maschinenbau. In diesem Falle wenden wir uns speziell an Absolventen und Berufseinsteiger mit einem Diplom-, Master- oder Promotionsabschluss, die auf herausragende Leistungen/Abschlüsse verweisen können und sich bereits mit den Zulassungsbedingungen für eine Ausbildung zum Patentanwalt (m/w) auseinandergesetzt haben. Wenn Sie über einen ausgeprägten Weiterbildungswillen verfügen, sich gerne sehr anspruchsvollen Aufgabengebieten im Bereich des Maschinenbaus widmen und eine berufliche Herausforderung mit sehr guten Karrierechancen suchen, dann sind Sie hier genau richtig!

Darüber hinaus besitzen Sie ein ausgeprägtes Interesse für (patent-)rechtliche Fragestellungen und konnten bereits umfangreiche Erfahrungen in der Datenbankrecherche sammeln.

Persönlich zeichnen Sie sich durch Teamfähigkeit, eine selbstständige und flexible Arbeitsweise, Organisationsgeschick, freundliches Auftreten sowie eine schnelle Auffassungsgabe aus. Sehr gute Englischkenntnisse runden Ihr Profil ab.

Das Unternehmen:

Unser Mandant ist eine der führenden Patentanwaltskanzleien, die sich im internationalen Umfeld den Schutz des geistigen Eigentums auf allen technischen und verwandten Gebieten zur Aufgabe gemacht hat. Ein Schwerpunkt sind Marken und Patente weltweit. Die Entwicklung und Nutzung innovativer Lösungen der Bürotechnologie sowie die konsequente Dienstleistungsorientierung zeichnen das Unternehmen aus.



personal total Bremen Am Wall 116 D-28195 Bremen Tel.: +49 421 2784796-0 Fax: +49 421 2784796-6



Consulting

- Management consulting companies (directly after PhD, i.e. McKinsey, Capgemini)

 however: long-term prospects not that good.
- Technical consulting (labs, companies).
- Public sector/politics
 (scientific consultants to public servants, look also "science policy").
- Anything else! (requiring analytical/technical abilities or just an eager, adaptable mind).

Basycon

Wir sind eine mathematisch-naturwissenschaftlich orientierte Unternehmensberatung, die Großunternehmen aller Branchen berät und in der Projektumsetzung unterstützt.

Exzellente Mitarbeiter und höchstes professionelles Niveau sind die Basis unseres Erfolgs. Zur Verstärkung unserer Teams suchen wir als neue Kollegen/Kolleginnen

Promovierte Physiker

Voraussetzungen:

- · Klares analytisches Denkvermögen, exzellente Zeugnisse
- · Gute IT-Kenntnisse, eine Programmiersprache
- · Spaß an stets neuen Aufgaben und Herausforderungen

Mit diesem Hintergrund sind Sie bestens gerüstet, in hochkarätigen Teams anspruchsvolle analytische Probleme zu lösen. Sie bauen auf Ihren Stärken auf und erweitern in umfangreichen Schulungen (Consulting-Methodik, BWL, Kommunikation) Ihr Wissen und Können.

Neben einer abwechslungsreichen Tätigkeit, die Business, analytisches Denken und IT miteinander verbindet, erwartet Sie ein inspirierendes Umfeld mit großen Entwicklungschancen. Ein attraktives Gehalt ist selbstverständlich.

Überzeugen Sie sich von den spannenden Aufgaben, die auf Sie warten. Wir freuen uns auf Ihre Bewerbung.

Basycon Unternehmensberatung GmbH Welserstraße 1, 81373 München www.basycon.com, jobs@basycon.com



Technical/Engineering

- Various possible career paths!
- C++ and Python desirable...
- ...in combination with knowledge in physics/ engineering
- So you have an advantage over IT people!

- Lab experience is of advantage.
- Switch to an industryfriendly programming language.
- Develop your own codes/simulations (and don't forget testing and team-friendly coding).

Software-Test-Ingenieur (m/w)

München

Innovativ und verantwortungsvoll - Ihre Aufgaben sind herausfordernd:

- Untersuchung von sicherheitskritischer Embedded-Software oder Applikationssoftware
- Erstellung von Testfällen und -szenarien
- Erstellung von Testskripten und -prozeduren
- Durchführen von Reviews von Testfällen und -prozeduren

Individuell und erfolgsorientiert - Ihre Perspektiven sind ausgezeichnet:

- Entwicklung bereichsübergreifender Kompetenzen
- Zielgerichtete Seminare
- Strukturiertes Praxiscoaching von Beginn an
- Performance Monitoring

Starten Sie Ihre Karriere mit Zukunft - bei FERCHAU! Als absolut teamfähiges Talent im Bereich Luft- und Raumfahrttechnik, Elektrotechnik, Informatik oder einem vergleichbaren Bereich mit erster Erfahrung in der anforderungsbasierten Software-Entwicklung und ersten Kenntnisse in den Programmiersprachen: C++ und/oder Python. Zeigen Sie uns jetzt, dass Ihre viel versprechende Basis zu einer Grundlage unseres Erfolges werden kann.

Sie sehen Ihre Zukunft in spannenden Projekten der Luft- und Raumfahrt? Dann freuen wir uns auf Ihre Bewerbung über unser Online-Formular unter der Kennziffer FE10-30934-M an Frau Andrea Mair. Denn was für unsere Kunden gilt, gilt für Sie schon lange: Wir entwickeln Sie weiter.

Fon +49 89 500381-0 Fax +49 89 500381-99 » muenchen@ ferchau.de HILFE **Tipps und Antworten** rund um Ihre Bewerbung bei FERCHAU finden Sie in unseren » FAQ. **AUSZEICHNUNG** 2013 trendence 2012 2011 2010 2009 2008 2007 2006 Beliebtester Arbeitgeber im Bereich Engineering-Dienstleistungen



- Increased need for medical physicists.
- Theoretical knowledge (radiation physics) quite desirable.
- Positions in hospitals, universities or research institutes (i.e. DKFZ Heidelberg).
- Also post-doc positions (ideal for a change of field).

Medical physics

- On-the-job training possible (look for relevant job ads in DGMP register).
- Master online program.





(Scientific/technical) translator

- Freelance work!
 (flexibility) i.e. User
 manuals, technical
 descriptions, popular science
 books.
- **EU spots** for native speakers (English to your mother tongue).
- No formal training necessary (in Germany).

- **Volunteer** now (i.e. Public outreach for your institute, Science in School etc).
- Start by charging lower fees.
- **Network** also online (translator groups, communities, facebook...).



Other ideas

- Support astronomer (telescope facilities).
- Scientific publisher (Elsevier, Springer etc).
- **EU careers** (competitions).
- Proof-reader (for Master-PhD dissertations, or other school papers).
- Climate science (simulations, research, meteorology).
- Invent your own job. Start your own company. Be a freelancer.
- Do something completely different your problemsolving skills will help you there too.



What needs to be done

Most of us will end up in a nonacademic job.

- Need to inform students about the realistic situation in academia.
- Need to lift the taboo status of "leaving academia".
- Need to change the student education in order to "produce" professionals who are also industry-smart.
- Need to educate scientists about ways to develop universally useful skills while benefiting their academic career.



Jobs for Astronomers - what we're trying to do about it

- Gathering and categorizing online resources by field.
- On the process of building an easier to navigate website.
- On the process of building a job register for nonacademic jobs with various search options (country, field etc).
- Trying to raise awareness both within academia and without.
- Promoting exchange through our facebook group.



A little bit of advice (about work and career)

- Decide where you want to live (or if you want to move around).
- Decide in which professional area you want to work.
- Educate yourself: policies and requirements in your field and country of choice.
- Irrelevant of whether you think you'll leave academia or not: manage your skills in an industry-friendly way (industry-friendly programming languages, show initiative, be active in your scientific community, show team spirit, start collaborations, have friends outside the lab and network).
- **Stay informed** what are your astronomer friends doing professionally? Which companies are astronomer-friendly? In which fields is there need for good professionals?



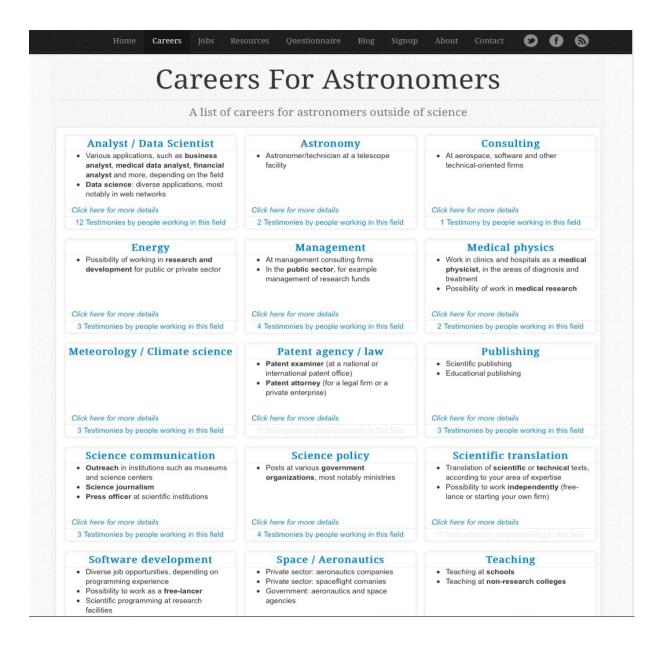
A little bit of advice (while applying for a job)

- Write a resume, not a CV!
- Be well informed about the company/employer you're applying to.
- If possible, **contact them personally** in order for your resume to be noticed. Ask questions, show interest.
- Don't apply too widely...
- ...but choose your targets carefully and network!
- Acknowledge the fact that people might not really understand the breadth of a scientist's abilities.
- Finally, if you get a job, share your experience and insight with us (i.e. by filling in the JfA questionnaire)!



Some problems you might face

- Your job experience doesn't count.
- You are overqualified.
- Employers don't realize what you can do just because you don't have a certificate for it.
- You don't **advertise yourself** properly you forget your skills (public speaking, extensive IT experience, team worker, problem-solving, statistics, mathematics, visualization ...).
- You're too old to be starting in a new field (younger people are cheaper...).
- Your employer is **less of an expert** in the field you are applying to than you are (statistics, data science ...).



Resources

- www.stepstone.de
- www.pro-physik.de
- www.hespace.com
- www.spacecareers.com
- DLR job register
- ESA job register
- ...

- Our website: www.jobsforastronomers.com/careers
- AAS career profiles: www.aas.org/jobs/career-profiles