The Job Application

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(including material / input from Claudia Paladini, Evelyn Johnston, Jonathan Smoker, Fuyan Bian, Pedro Figueira, Juan Carlos Muñoz, Henri Boffin, Glenn v. d. Wel, Eric Ensellem)

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What do I like most?

Academia (teaching & research)?

Outreach, science journalism?

Observatory?

Management?

Stable life? Outside astronomy?

Pure research?

Instrumentation?

What do I like most?

Be honest to yourself – find out what <u>you</u> really want

- Think hard why <u>you</u> really want *that* job. What is your real driver?
- What is <u>your</u> long-term goal? Dreams vs reality.

Know thyself – be aware of your strengths and weaknesses

- Ask colleagues, collaborators and supervisors for feedback

Remember your skills

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Things an astrophysicist does
SciComm
School projects
Guided tours
Social Media
Public talks
Teaching
Supervising theses
Seminars
Lectures
Lab
Communication
International collaborations
Discussions
Presentations
Writing
Paper
Proposals
Funding
Observation time
Articles
Data
Programming
Extraction
Analysis
Interpretation
Physics
Theories
Brooding
Testing
Adapting
Simulations
Telescopes
Organisation
Planning observations
Triggering observations
Development
Software
Hardware
Construction
Administration
Meetings
Organisation
Travelling
Observing
Conferences
Presentations
Networking
Collaborations
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Remember your skills:

- Problem-solving oriented person
- Project management
- People management
- Team working
- Finance/budget management
- Communication skills (to technical and non-technical audience) & Teaching
- Technical expertise
- Computing and programming
- International experience
- ...

Tenure-track positions ...

You may feel that you are not ready / qualified to apply for a (tenure-track) job yet ...

... but employers may see this differently.

Tenure-track positions ...

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... but employers may see this differently.

Start early to apply for tenure-track positions (after 1-2 years of postdoc)

- Independence, collaboration network
- Even if you don’t get the job, it’s may be a very good training ground (feedback!)
- Remember: Tenure-track position usually come with duty load (teaching, observatory, ...)

Tenure-track positions ...

If you wait long, you will compete with excellent junior candidates ...
If you start very early, you will compete with more experienced candidates ...

“To be able to win the game, you have to play it.”

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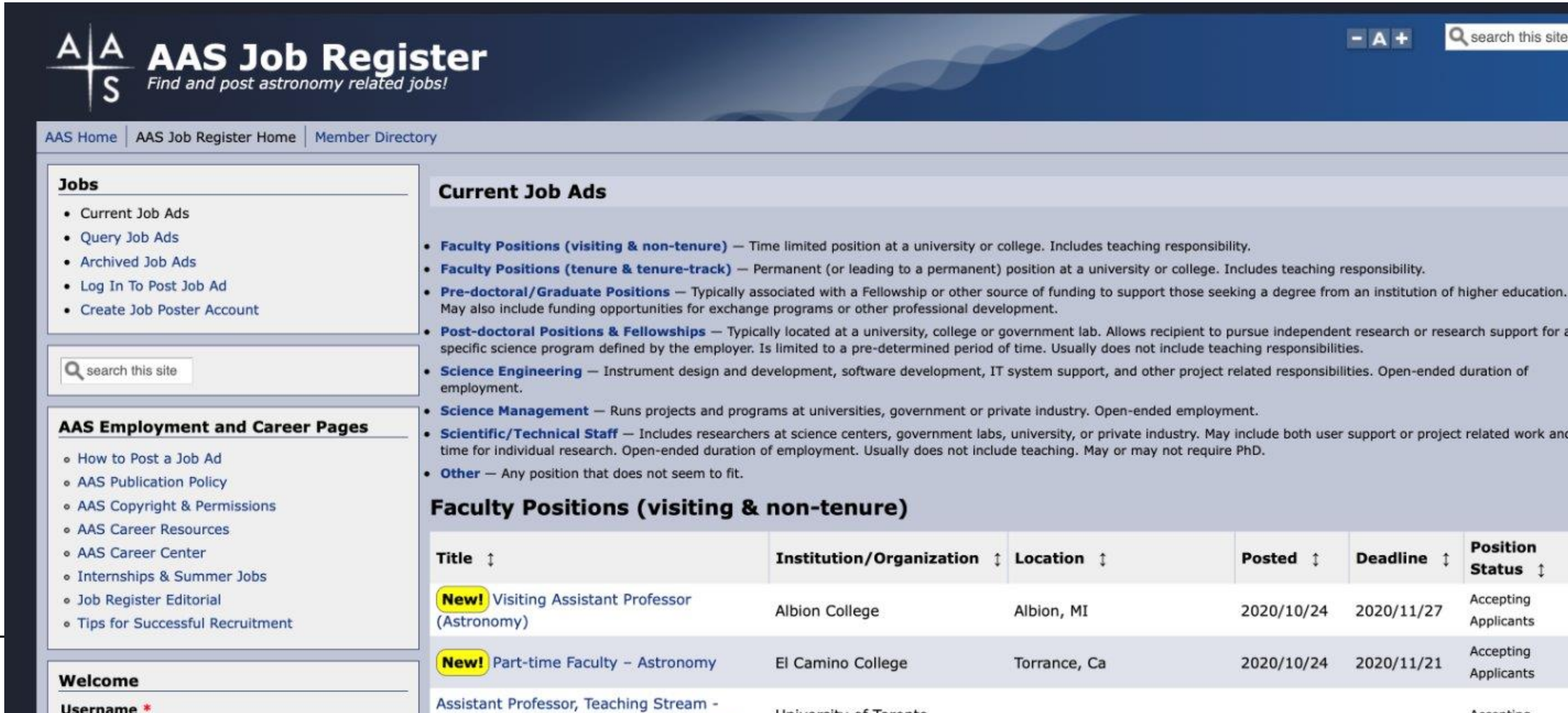
Where to look for job ads

Where to look for job ads

- ***https://aas.org/jobregister***



Where to look for job ads

- Science newsletters (ESA, national funding agencies ...)
- Ask around; use your network to hear about jobs

Where to look for job ads

If you have a great science idea, there are opportunities to fund your research project:

- Marie Curie Fellowship (Europe)
- Sagan-, Hubble-, Princeton Fellowship et al. (US)
- European Research Council (ERC) grant, starting 2 yrs after PhD
- Alexander-von-Humboldt Fellowship (Germany), up to 4 yrs after PhD
- Tenure-track programs: Ramón y Cajal (Spain), CNRS (France), ...

... and many, many others ...

Job opportunities at ESO

- **ESO Studentship (PhD students)**
  - Duration: 6 months up to 2 years
  - You need a supervisor at ESO (in addition to your supervisor at home university)
  - There are two annual application deadlines: on April 20th and October 20th.

Check the ESO science pages (scan QR codes below) for potential supervisors at ESO and contact then well in advance!

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ESO Europe

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Job opportunities at ESO

- **ESO Chile Postdoctoral Fellowship (Santiago / Paranal)**
  - 4 years (3 years with observatory duties and 1 year 100% science time)
  - Observatory duties: 80 nights per year support astronomer on Paranal or ALMA (= 50% of the working time, the rest science time)

- **ESO Europe Postdoctoral Fellowship in Garching (Munich)**
  - 3 years with 25% duties in User Support Department or 40 nights per year support astronomer on Paranal

Annual application deadline: Oct 15th

Preparation is key

SHOW
YOUR
FACE

Remember: You shall not underestimate the fruits of networking!

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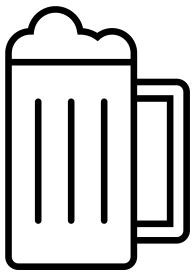
Make yourself visible:



- **Go to conferences, interact; don't hide!**
  - The best collaborations are started in pubs. ☺

- **Visit potential workplaces beforehand**
  - Do talk tours, give (online) seminars, meet potential employers ...

You don't wanna be applicant #53.

The more people know you, the higher the chances of getting the job you really want!

Do you homework:

- **Find out more about the research group**
  - *Are they active and well embedded? Publications?*
  - *Access to data & telescopes? Data available?*
  - *Active collaborations?*
  - ***Can they open doors for you? Good mentor?***

You want a good job (afterwards), not a dead end!

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Do you homework:

- **Find out more about the institute**

  - What is their mission, their goal?

- **Identify potential collaborators there**

  (or people who worked there in the past)

  - You may want to contact them (but don’t pester them)

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How you **don‘t** get a job:

- Don’t read the job ad.
- Send a boilerplate application to save time.
- Reviewers love packed documents! Use font size 8 so you make sure that every detail is in your application.
- Be vague. Express doubts about yourself and your project.

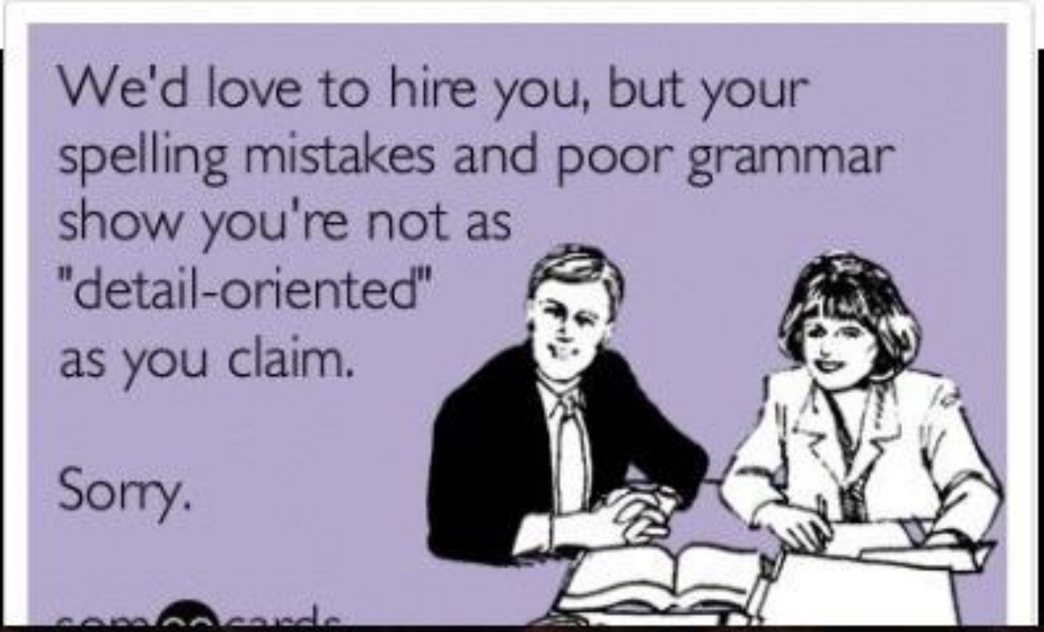
How you **don‘t** get a job:

- **Assume** that the reviewers are experts in your field. Use a lot of specific jargon and funny ACroNymS. Reviewers love them!
- **Assume** that the reviewers will do the math (they have so much time to figure out everything!).
- Complain about your current supervisor / collaborators / institute. The reviewers will understand you.
- Tyops

How you **don‘t** get a job:

For me participate ESA program is amazing challenge and a great pleasure. So many things to learn and discover and with you I know that will be wonderful. Therefore I'll be waiting and available for work and contruibute for ESA any time. I hope to see you later.
My best regards,

ENGLISH !



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Do's

- **Read the job ad**
  - *You don't want to be the candidate they remember for sending 50 emails asking questions that are explained in the ad*
  - *Understand and follow the instructions (length, format, reference letters etc)*

- **Tailor your application for the job**
  - *Personalising your application for that job shows you are truly interested*

Do‘s

- Focus! **Always get to the point.**
  Be clear, confident and **explicit.**

- **NEVER assume that reviewers will do the math (they won’t)**

- **Demonstrate** that you have the skills / expertise
  - *provide examples*
  - *or, show how you will acquire them*

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What are **employers** looking for?

- **You can do the job and bring skills / expertise**
  - Publications, talks, coding, instruments, data analysis techniques, …

- **You show initiative and motivation**
  *- **Team player**, good communicator, reliable, open to new ideas, …*
  *- Active, focused, **not giving up easily**, independent (fellowships!), easy to work with …*

- **A good investment**
  - They want to use their funding in the best possible way
  - You are an "ambassador" to advertise the research group & institute

What are **employers** looking for?

*(+) **Ability to plan and manage a project**, successful PI-proposals …*

*(+) Expert in the field, **clear vision about field** & (own) future ...*

(+) Collaborations, access to data, able to attract funding, teaching, ...

*(+) **Good soft skills!***

Remember: It is hard to acquire funding for a position; employers want to make sure that the money is well invested

Generic positions
(e.g., fellowships, staff, ESO, ...)

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Generic positions

A selection committee reviews a large number of applications
... at the same time,
... within a few days.

Keep in mind:

- *If the key information does not stand out, it might get overlooked (and you're out!)*
- *You will compete with many other exciting fields & outstanding projects*
- *Most reviewers will not be experts of your field*
- *Reviewers might be tired, as they have already read many applications*

Make it easy for the reviewers ... please!

Committees look for strengths and weaknesses

- **Typical <u>weaknesses</u> in fellowship or staff applications:**

  - research plan is written for experts

  - contribution to projects not clear ("<u>we</u> did")

  - low publication rate, low number of (recent) lead author papers & talks

  - not clear why this institute

  - unrealistic timelines

  - overconfident that nothing can go wrong, no data in hand ...

Reviewers: Can the candidate survive & thrive in the job?

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Committees look for strengths and weaknesses

- **<u>Strengths</u>:**

  - *clear **motivation** why this job and institute (ESO: e.g., why observatory duties?)*

  - *clear long-term **vision** & growth (astronomy, own research, professional, ...)*

  - ***independence** & network of collaborations*

  - *clear **benefit** for the candidate <u>and</u> institute highlighted (“I bring ...”)*

  - ***key messages** (“take-home” messages) for the committee*

  - *realistic timeline, feasibility, **risk analysis** + Plan B*

Reviewers look for strengths and weaknesses!

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The Application

The Application

- **Cover Letter** = Motivation Letter
- **Curriculum Vitae (CV) and Publication List**
- **Statement of Research Interests** = Research Plan
- **Reference Letters** = Recommendation Letters
- (**Teaching Statement**: your teaching & mentoring experience & philosophy)
- (**Diversity Statement**: your personal experience with bias; lessons learnt; how to promote future equity, diversity & inclusion initiatives; psychological safety; tearing down barriers - making science accessible; outreach activities ...)

Goal: make the committee curious so that they invite you for an interview!

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The Cover Letter

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The Cover Letter

- **The cover letter provides a first important impression about yourself: it's a teaser**

  - It's your 2 min of glory - it will set the mood for the application
  - Think of a good opening – it can make a difference

- **Address the recruiters personally**

  - At least say something like ('Dear members of the XXX selection committee')
  - Specify which position you are applying for

You shall not underestimate the importance of a good cover letter!

The Cover Letter

- **Demonstrate how you meet the key selection criteria**

  - *It's **NOT** a summary of your CV*
  - *Use it to **highlight the relevant skills & expertise of the job ad***
  - ***Be proud**: highlight your achievements!*

- **Convey your selling points: what makes you the best candidate? Why should they hire you?**

  - ***What do you offer?***
  - *Why that institute? How do you fit in there? Collaborators?*
  - *Show your vision, your **long-term plan** (= you are a good "investment")*

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The Cover Letter

- **Write it even if not explicitly requested**

  - Also use it for addressing issues there
  (e.g., not yet PhD;
  supervisor not writing letter;
  gaps in CV;
  how you will acquire skills you don’t have)

- **Keep it concise (~1 page of text)**

You shall not underestimate the importance of a good cover letter!

I am writing to apply for the ESO Fellowship based in Santiago, Chile. I am currently an NAOJ/ALMA fellow based at the Joint ALMA Observatory. Prior to this I attained my PhD at the University [redacted] writing and defending my thesis [redacted]

I am applying to this position as I wish to continue my career in astrophysics in a stimulating environment that combines both a vibrant scientific research community with opportunities to take part in cutting edge observations with world class facilities in the heart of observational astronomy in Chile. Through doing so I wish to develop my abilities both scientifically and personally, so that in the following stage of my career I will be equipped to prepare for staff

It is with great energy and excitement that I am writing to apply for the ESO Fellowship Programme. Having achieved my PhD, I have found my passion for astrophysics undimmed and wish to take it further with this fellowship representing the perfect opportunity. It was the successful call

As a passionate astronomer who is dedicated to learning more about the mysteries of the universe and applying these skills to the global community, I am looking forward to the next stage of my academic career. ESO's reputation and world-class facilities make it the idea

The Curriculum Vitae

The Curriculum Vitae

- **Make sure that the key info stands out (pages 1+2)**
  - Put the requested skills and expertise there
  - The CV must be adjusted / structured to fit with the job

- **Find the right balance: don’t pack your CV**
  - It’s not a dumpster!
  *- **Summarize** where useful (provide metrics, lead author / co-I papers, h-index, ...)*
  *- **Less is more:** only put the relevant information for the job there*

The Curriculum Vitae

- Your contact information
- list your **education, job history, skills**, **further training, expertise**
  - e.g., software, observing techniques, data analysis, instrumentation, ...
- list (recently) **accepted proposals / grants as PI**
  - show that you can bring data / money
- list your (recent) **talks / contributions** at conferences, seminars, … *highlight the invited conference talks*
- **Mentorship + student supervision, teaching, outreach,** …
- Contact details of referees

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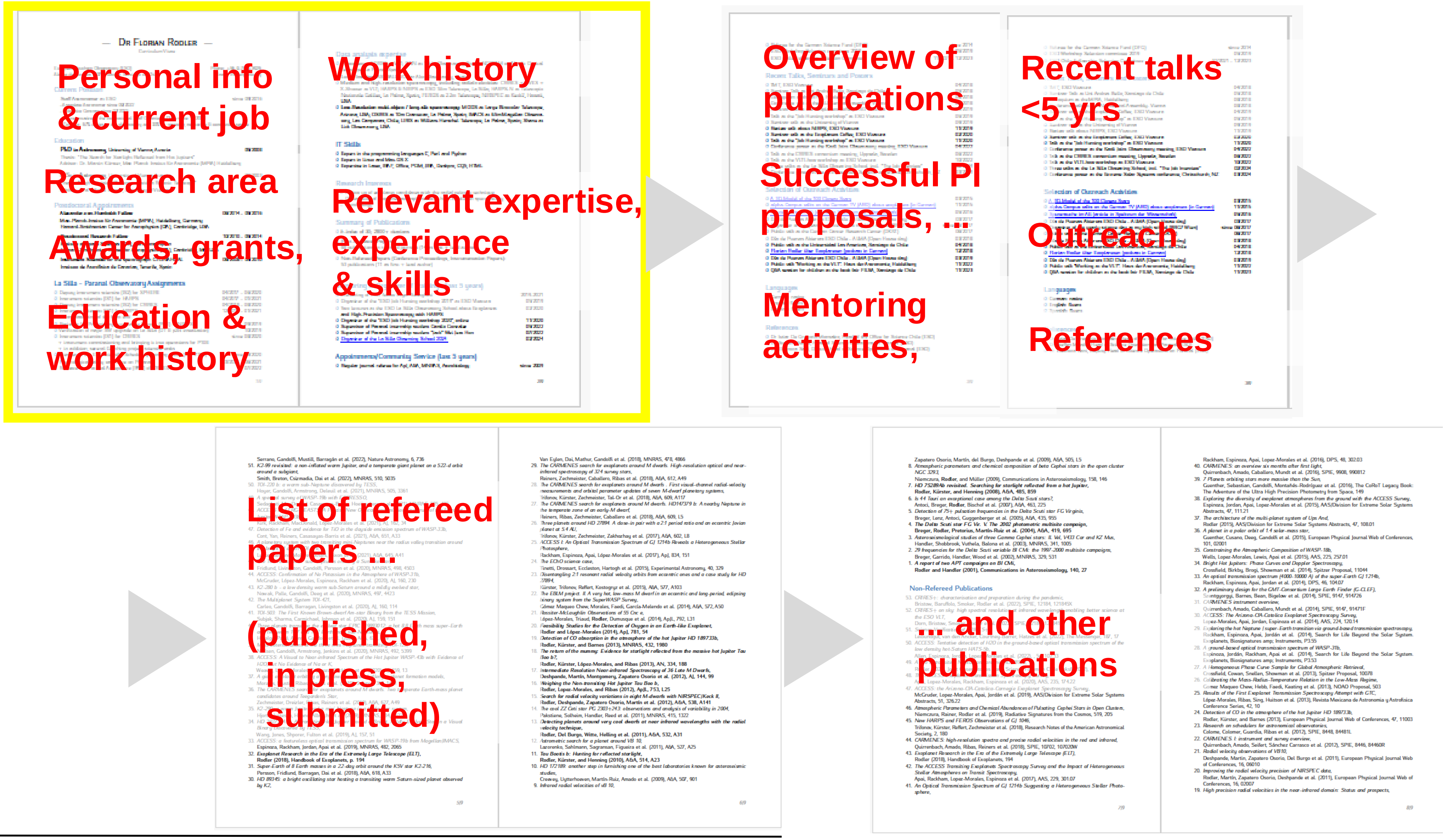
The Curriculum Vitae



Statement of Research Interests

Previous / current projects (~1 page)

- *Context*
- *What were the questions you (have) tried to answer (or answered)?*
- *What have you learnt? What were the challenges that you have overcome?*
- *Highlight aspects that are directly relevant to the position you're applying for*

Future / Proposed project

Tell it like a story!

Future / Proposed research (1)

Context!

- ***Basic introduction into the field (if not done before)***
- ***Motivation :*** *What is the main question you want to answer with your project?*
- ***Relevance:*** *Why is it relevant? Why should it be funded? (exoplanets vs. AGNs ☺)*
- ***The Project:***
  - Focus on the future, what do you want to do within the next years, and how.
  - Show that you have ideas of your own (even for a project-specific postdoc).
  - Explain how will your project benefit from being at that institute, and what you will bring to the institute
- *...*

Future / Proposed research (2)

- *Basic introduction to the field (if not done before)*
- *Motivation*
- *Relevance*
- *The Project*
- ***Data:** What data is needed and what do you have already in hand?*
- ***Feasibility, risk assessment, timeline:** What could go wrong? Weaknesses? Plan B?*
- ***Impact:** How will your project advance your field of research? What will you learn?*
- ***Vision:** Where will you & your field of research be at the end of your project, in 5 years, ...?*

Statement of Research Interests: Context

- **Basic introduction into your field and topic**

  - *What is the main question you want to answer? Why? How?*
  - *For generic fellowships, find the right balance for non-experts and experts:* ***the more reviewers you convince, the better!***

- **How does your research relate to the bigger picture?**

  - *What work has previously been done?*
  - *Highlight **your** contribution: "**I achieved ...**" (especially in collaborations)*
  - ***Demonstrate** your ability to lead and conclude a project. You can do the job!*
  - *How will your project advance the field (now - after)?* ***Long-term vision!***

Statement of Research Interests

- **Make it easy & enjoyable to read**

  - *Don’t pack it (respect the page limit, font size at least 11 pt ...)*
  - ***Avoid walls of text, long paragraphs, long sentences.*** *They look intimidating and tiring.*
  - *Don't get lost with tiny details. Instead, convey the bigger picture!*
  - *Highlight **key messages** for the committee!*

- **Mention (potential) collaborators at the institute**

- **Make sure text / figures can be understood by non-experts**

  - *Explain them*

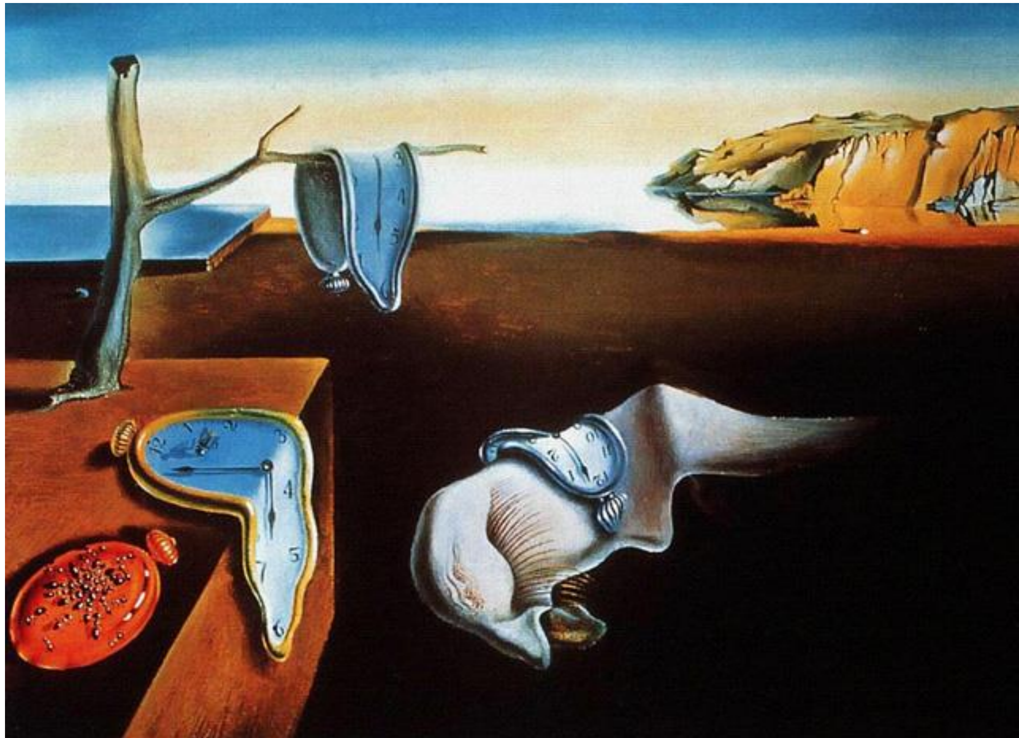
Statement of Research Interests

- **Time management & feasibility**

  - *Present a "realistic" timeline*
  - *Show that you have the means to do what you want (**data**, **software**)*
  - ***Back-up plan!!!** Be aware of the **weaknesses** of your project.*
    (What happens if your observing proposals gets rejected or you won't get data?)

- **Proof-reading!**

  - *Ask colleagues & collaborator for feedback.*



RESEARCH STATEMENT

[redacted]

I completed my bachelor's degree in Physics and Astronomy but after my graduation, I was engaged in teaching basic Physics at a high school where I got keen interest of imparting knowledge to the younger ones. This actually necessitated my decision to pursue a career in teaching and research in Physics. As a result, I decided to upgrade completely my carrier track by starting a postgraduate programme in Physics. I choose the field of Astronomy because of my personal love for sky gazing, watching mainly the milk way and Triangulum galaxies.

RESEARCH EXPERIENCE: I have worked on several research projects while enrolling in postgraduate programs. My masters' thesis was on '[redacted] under the supervision of [redacted]. It is based on statistical analysis of a large sample of Jodrell Bank Observatory (JBO) radio pulsars with improved and published data on stability parameters (Δ_8) and other quantities that are used to parameterize pulsar rotational fluctuations on observation timescales [timing noise activity parameter A, timing noise statistic (σ_{z}) and pulsar clock stability parameter $\sigma_z(T)$] which were compiled for an in-depth characterization of the spin-down evolution of rotation-powered pulsars. The existence of any relationship goes a long way in helping to probe the properties and dynamics of a neutron star. The results of our analysis reveal that radio pulsar spin-down parameters are reasonably coupled to timing noise activity. A simple regression analysis of our data show that timing irregularities in pulsar is more than 75% correlated with the magnitude of pulsar spin-down variables. The implications of the result of the improved measurements of the key parameters characterizing the spin-down of pulsars on long timescales are discussed in the thesis.

However, our later research articles centred on pulsar spin-down evolution as well as pulsar glitch mechanisms. We showed from a detailed analysis that the angular momentum transfer model could readily account for the current range of pulsar glitch sizes. We also discussed the present challenges faced by the angular momentum transfer mechanism, and indicated that it is no longer enough to explain glitches and the present equation of state is not enough to model a glitching pulsar. These projects exposed me to the use of python, matlab and statistics in interpretation and modelling of astrophysical data.

In my Ph.D dissertation, we looked at the unification scheme of active galactic nuclei using a sample of radio galaxies and the blazar subclasses of flat spectrum radio quasars and BL Lacertae objects by

1

investigating the consequences of relativistic beaming on the unified scheme of blazar populations and radio galaxies. This work was supervised by [redacted]. Our results show remarkable continuity in the distributions of source luminosities (radio core and extended luminosities, L_C and L_E respectively as well as γ-ray luminosity L_γ) from radio galaxies at low luminosities to FSRQs at high luminosities through BL subclasses as expected in the blazar unification scheme in a sense suggesting that the sequence of BL Lacs, FSRQs and radio galaxies represents progressively misaligned populations of AGNs. Distribution of radio core-dominance is consistent with average projection angle of 13.5, 14.8, 16.8, 20.4 and 28.2 for ISPs, LSPs, FSRQs, HSPs, and radio galaxies, respectively. Linear regression analyses of our data yield significant anti-correlation ($r > 0.60$) between core-dominance parameter (C) and L_E in each individual subsample: the correlation is significant only when individual subsamples are considered. There is a systematic sequence of the distribution of the different subclases on the $C - L_E$ plane. Nevertheless, little or no correlation between C and L_C or between C and L_γ ($r < 0.50$) was observed. There is a clear dichotomy between high synchrotron-peaking BL Lacs and other BL Lac subclasses. The results are consistent with a unified view for blazars and can be understood in terms of relativistic beaming persisting at largest scales.

Similarly, since our understanding of the unification of jetted AGNs has advanced greatly as the size of extragalactic sources increased, we also compiled a sample of AGN subclasses to statistically test the relationship between Seyfert galaxies and the blazar samples of FSRQs and BL Lacs by computing the synchrotron (SS), Compton (CS) and inverse Compton (IC) continuous spectra from the low energy components of radio to X-ray, radio to γ-ray and the high energy component of X-ray to γ-ray bands, respectively. Results show from the distributions of the continuous spectra that Seyfert galaxies form the tail of the distributions, suggestive of similar underlying history and evolution. A two-sample Kolmogorov-Smirnov test (K-S test) of the continuous spectra showed that Seyfert galaxies differ from BL Lacs and FSRQs in the low energy components of the spectra, while there is no clear difference between them in the high energy component, which implies that high energy emissions in Seyfert galaxies, BL Lacs and FSRQs may be as a result of the same emission mechanism. There is a regular sequence of the distributions on $SS - CS$ and $IS - CS$ planes in each individual subsample. Linear regression analyses of our sample yield significant positive correlations ($r \sim 0.60$) between $SS - CS$ and $IC - CS$ data. This upturns into an anti-correlation ($r > -0.60$) in IS SS data. These results are not only consistent with unified scheme for blazars but also show that Seyfert galaxies can be unified with the classical radio-loud AGNs counterparts.

2

Meanwhile, I have supervised several undergraduate research projects in Physics and Astronomy and have also contributed significantly in the discussion of M.Sc seminars of our postgraduate students in our research group. In addition, I participated in the postgraduate stream of West African International Summer School for Young Astronomers (WAISSYA) 2019, where I learned data reduction and model (Frequentist and Bayesian) optimisation using python programming among other skills. In the course of these researches/workshops. I have also learnt data reduction skills of telescopic and interferometric data using common astronomy software applications (CASA) and python programming. Such good analytical and computational skills coupled with efficient team working attitude, research discipline and problem management skills is indispensable in learning process during the programme.

FURTHER RESEARCH INTERESTS: Galaxies are the fundamental building blocks of the universe and massive galaxies are known to be active due to intense accretion of matter onto a supermassive black hole at the centre of the galaxy. It is widely believed that the energetic output of radio-loud active galactic nuclei (AGN), which launch powerful relativistic jets of material, plays a significant role in controlling star formation in their surrounding galaxies. This led me to undertake a project that is centered on possible ways of addressing some of the existing gaps in our knowledge of the physical processes that drive radio-loud AGN activity and how these physical processes evolve across cosmic time. This can be done through the vast samples of radio-loud AGN being generated in various surveys at radio, optical, X-ray and γ-ray frequencies. The research focused on developing some theoretical framework for modelling and statistical interpretation of the observed data for both high- and low-redshift AGN. Specifically, the project employed multi-wavelength data that are readily available in public archives to investigate the accretion/emission properties of AGN over a wide range of redshift. Special attention was paid to similarities and/or systematic differences in the data, which was interpreted in the context of the evolutionary scenario.

My ultimate goal is to work with research based groups in space science and extragalactic radio astronomy in order to pursue programs of scientific research with a view of consolidating existing knowledge or uncovering fundamental knowledge concerning the astronomy and astrophysics and improve human resource capacity building through training. I believe that the position I applied for will enable me to utilize my full potentials and produce new and original research findings for application of national interest. I perceive this opportunity as extraordinary as there will be interactions with scholars from diverse professional and cultural backgrounds. This type of networking will provide means for greater international understanding, solidarity and collaboration between scientists worldwide.

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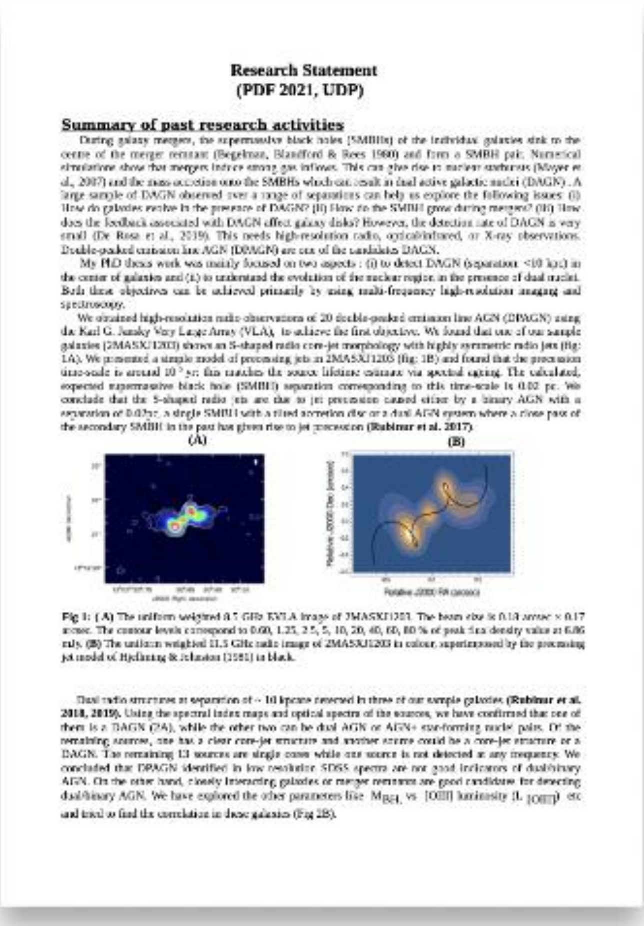

Research Statement
(PDF 2021, UDP)

Summary of past research activities

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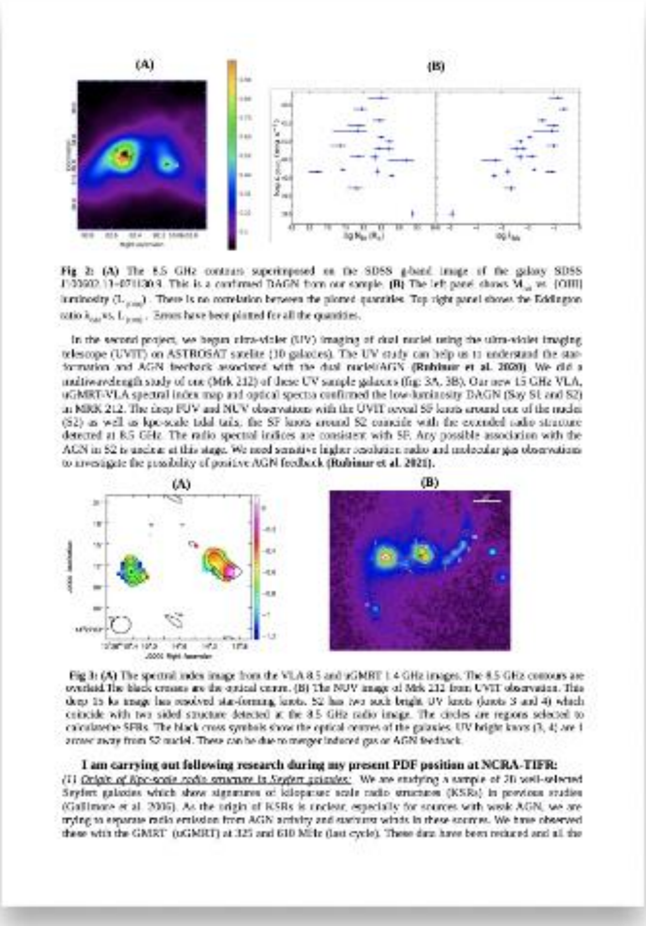
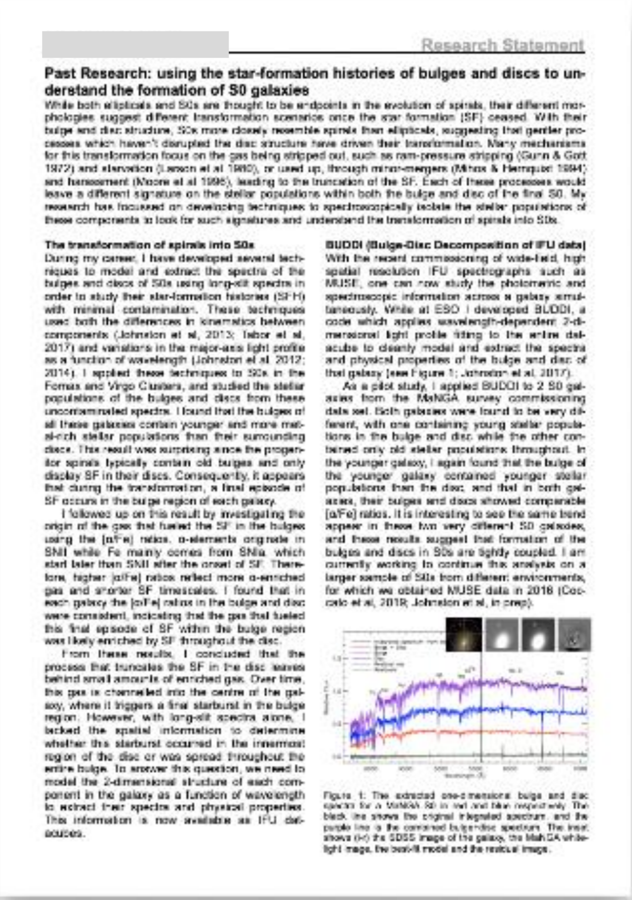


I am carrying out following research during my present PDF position at NCRA-TIFR:

2

Outline of research plan at UDP:

3


Research Statement

Past Research: using the star-formation histories of bulges and discs to understand the formation of S0 galaxies

The transformation of spirals into S0s

BUDDI (Bulge-Disc Decomposition of IFU data)

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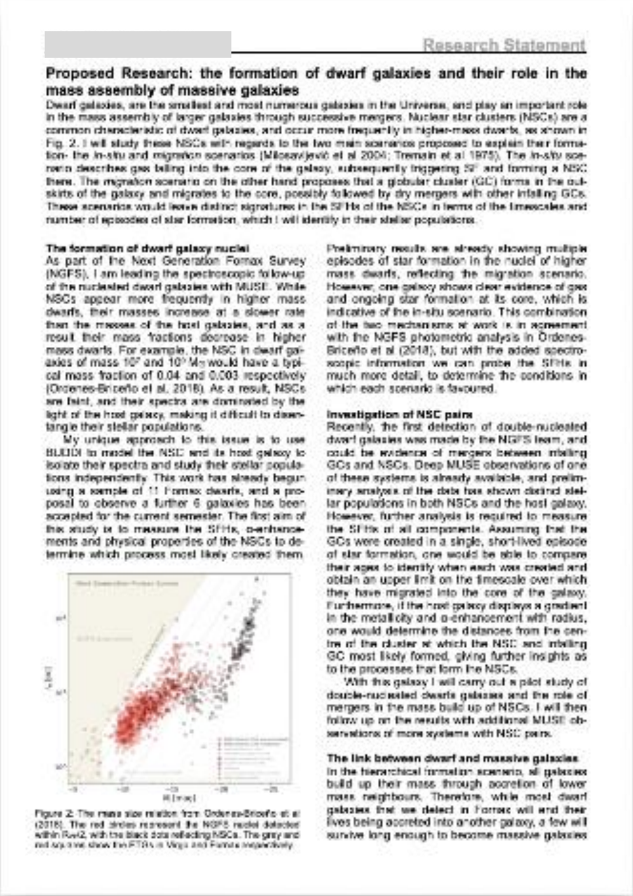

Research Statement

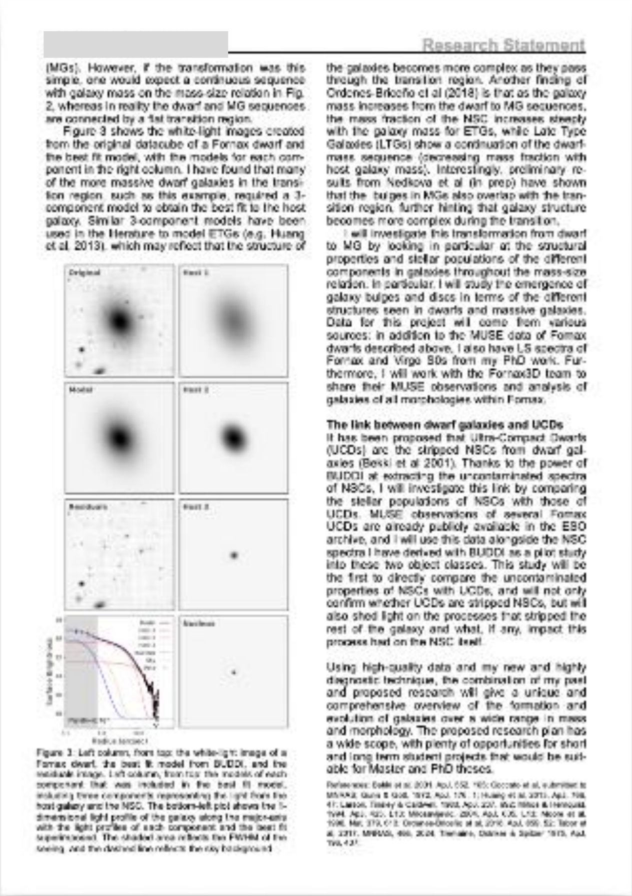
Proposed Research: the formation of dwarf galaxies and their role in the mass assembly of massive galaxies

The formation of dwarf galaxy nuclei

Investigation of NSC pairs

The link between dwarf and massive galaxies

2


Research Statement

The link between dwarf galaxies and UCDs

3

Reference Letters

Reference Letters

- **Reference letters are very, very important!**

  - They provide additional information about you: ***how it is to work with you***

- **Ask referees who know you well / have worked with you**

  - Everyone can write a letter. But you want a ***supportive*** *one:*

  "I will need a ***strong / supportive letter****, would you agree to ...?"*

  - Tell them what the job is about, what to highlight, send them the job ad

  - Ask them for their honest feedback if they really can support you for that job

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Reference Letters

- **Letters need to be tailored for each position**
  - *Ask early: writing an excellent letter is a lot of work*

- **Make sure that the letters are submitted on time**
  - *Tell the referees to whom to address it, where to send it, when to send it*
  - *Send a reminder one week before the deadline!*

(Dear referees, *don't blabber endlessly about the applicant's research and papers.* ***Tell us about them, how it is to work with them!)***

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Reference Letters

- **Diversify your referees**
  - Cultural differences (US vs. Europe)
  - You can ask each referee to highlight a specific aspect in their letter
  - If you are never invited for an interview, the reason could be a referee writing a bad letter

- **Send the job ad & your application to the referee + ask them for feedback**
  - If the feedback is useless, consider choosing another referee ☺

***(Dear referees,** don't blabber endlessly about the applicant's research and papers.*
Tell us about them, how it is to work with them!)

Can you read your application within a few minutes?

After a tiring day?

Good luck with your applications!

The Job Application – Take-Home Messages

- Tailor the application to the job
- What can you bring (expertise, skills, ...) and learn? Why should you be hired?
- Demonstrate how you meet the key selection criteria
- Be clear, be explicit, come to the point.
- Make it easy for the reviewers (they may not be experts)
- Know the strengths & weaknesses of your CV, project
- Selling points: Have clear take-home messages for the reviewers
- Give sufficient time to the referees writing good reference letters