

Applying for PhD positions in Astronomy & Astrophysics

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What should you consider when choosing a position?

Introduction

This document describes the process behind applying for PhDs in astronomy and astrophysics. It includes mostly tips from former master students from the Anton Pannekoek Institute (API, Amsterdam) who have successfully applied to positions around the world. To ensure the document remains useful, please consider contributing to this document after your own application process. To do so, just add your name, email address and place to the author list at the top of the document and edit away.

Some general advices:

1. Starting on time with finding the places you are interested in and preparing your letters is key to a successful PhD application. However, note that there will be many PhD positions advertised later in the year. There are many good reasons to delay applying and my experience is that there are still many applications even after the major application round in Nov/Dec/Jan. For example this year there were still several positions advertised in April. (Though it is definitely good to prepare on time!)
2. Don't compare yourself (too much) with your fellow students. Often supervisors are looking for not just the student with the highest grades but for the "entire package". So also whether you collaborate easily, work individually, are passionate about your research do play a crucial role. Moreover, the grass always looks greener on the other side; so likely the person you are comparing yourself with is thinking similar about you. See also perhaps [this](#) helpful link.
3. Don't take it personal if you don't get invited or chosen in the end. This happens to everyone and it does not have to mean that you are not good enough. Sometimes the supervisors are looking for someone with a specific background or interest, and sometimes they decide for instance to choose the student that they already know. I've experienced myself and seen many times that students don't get invited for one position, whilst getting an interview for another much more prestigious place.
4. Ask for help. For example on your letters on information about institutes etc. Usually supervisors or fellow students really enjoy learning what PhD positions you are interested in, and are keen on helping you.

What should you know before considering a PhD?

Generally observed ratios seem to be:

- Approximately 10 people applying per position
- Approximately 5 people are viable candidates
- Approximately 3 people are invited per position

Given the odds, people tend to apply to 5-10 positions to increase their chances of ending up with a position (or something to choose from) in the end. Keep in mind that more applications also means more work for your referees, as most of them try to accommodate their letters to the respective position/institution.

This is sad but true: do not underestimate the importance of connections. If someone you apply with knows your current or former supervisor, list his or her name everywhere; e.g. in the first paragraph of your cover letter (otherwise they might have already stopped reading), on the first slide of your presentation, etc.

Also discuss your PhD plans with your thesis supervisor early on. Your supervisor can point you to interesting projects, nice supervisors, and (s)he might introduce you to someone important (as in: start the email conversation).

Lastly, definitely celebrate if you make it to the shortlist of ~5 viable candidates per position. Usually if potential supervisors spend time/money/effort on interviewing you, it means they really believe in you as a candidate and it usually means you already have all the qualities to pursue the PhD. Often in the end its just a matter of "who of the 5 fits best", rather than that the other 4 candidates are not good enough..

Where can you find information about positions?

The main place to look for PhD positions is the job register <http://jobregister.aas.org/>. This register of the American Astronomical Society posts new jobs every first day of the month. Most of the major institutions post their PhD positions here. However, often PhD positions that are graduate schools (such as in the USA) are not posted here.

The second place to look is on the websites of individual institutes, under 'PhD', 'Graduate school', 'jobs', 'vacancies' or elsewhere.

As stated earlier, asking your supervisor or other staff members in the API might help as well. This has several advantages: you will get a more realistic picture of the institute compared to the fancy website, and your supervisor will probably know (several) people at the location she/he recommends. Try to do this early on in your project, preferably a couple of months before starting your applications.

Which documents do I need to apply for PhDs?

Ideally you have a first version of all this ready ***well before*** your first deadline¹. Your first deadline will be the most stressful, and for later deadlines you can reuse a lot of your previous documents. Make sure to ask feedback from your thesis supervisor, peers and someone from outside the field. In most cases your documents will be read and discussed by astronomers, but be aware that there will sometimes be members of admissions committees from outside the field.

Try to submit your application at least two weeks before the deadline of your first application so that referees have enough time to write an entirely new letter and submit it, but for later applications it can be closer to the deadline. It's good practice to make an overview of application deadlines not just for yourself, but also your referees. It will help both them and you with submitting documents within the specified timeframe.

Although this might be obvious, be sure to follow the requirements to the letter! With easily over 100 or even 200 applications per institute, you don't want to make a bad first impression by not following the instructions. These instructions differ per institute, but some related institutes (e.g. Amsterdam and Leiden) sometimes use the same requirements.

One document that is rarely required but can be very useful, is an explanation of your grade system and guidelines for grade conversions. Especially for UK/USA universities, such an extra document or explanation can help to clarify your grades. Information on the conversion of Dutch to UK/USA grades can be found [here](#), or more generally on the [Nuffic website](#). In addition, e.g. the Bachelor diploma of the University of Amsterdam includes a list of grades as well as an explanation of the Dutch grading system in the diploma supplement.

Curriculum vitae

Should include some details on previous studies. Make sure to make an academic CV, which is structured differently than a 'normal' CV. Focus on studies and research (and if possible, teaching) experience and mention any grants you have received in the past. Photos on CVs are fine for applications in the Netherlands and Germany, but everywhere else they are a no go. Practical tip: LaTeX allows you to use if-statements, which makes it easy to switch between photo and no-photo. Use a professional email address in the contact details (in general for the application as well).

Also: it is generally advised to use a "standard" template for the CV. Perhaps making your own creative template is really original, but these people might only look for a few seconds to your CV and they might be tired. Having a standard CV helps them recognize where to look for certain information. (If you want to be creative: use for example some colors).

¹ The earliest deadlines are for German universities requiring applications by the start of November.

Also, the CV is actually one of the most important documents you need to provide. Often the reviewers look first at all the CV and then select a subset that they will look in more detail in (and start reading the motivational letter).

Bonus: make sure that your name (& email address) is on every page. And make sure that the most important information is on the first page (if you have multiple pages). In principle the shorter the CV the better since it is easier to read, but it is important to include all important work experience you have. However, usually the fact that you worked in a grocery store during high school is not important. Similar, in general you don't have to include for instance the high school you attended (but this is ok if you want to). There are many templates for the CV.

Tip: If you wanna test your CV: give it to someone and only allow that person to look ~30 sec at it. Ask the person what he/she remembers about your CV. These should match your most important experiences!

Academic transcripts

Often applications require academic transcripts with your grade. Sometimes an unofficial scanned copy suffices (e.g. Europe) but be aware if they require your University to send a hard copy with signature as it may take a few weeks to send this.

Cover letter / Motivation letter / Personal statement / Statement of purpose

The exact type of document often will change per country, but you can often reuse documents. However, make sure to tailor at least some details to the specific institute. This shows that you have done your homework and are actually interested in that location, but can also ensure that you will be considered for the projects that you are actually interested in. Your letter must show you have seriously thought about what it means to do a PhD and why you still want to pursue one. Also, don't be modest and show what you're capable of.

Do start with: "To Whom it May Concern" or if relevant "Dear Members of the Selection Committee", or if you are applying directly to one person, just put their name (Dear Dr./Prof. X). Be aware of the possibility that a woman reads your letter. (So do not write: "Dear Sir"). End with: 'Yours faithfully,' if you do not know the person you are writing to.

Try to introduce your most important qualities at the very start of the letter. When going through all the applications, supervisors might not pay full attention otherwise. Before writing your letter, it's good to have a detailed outline of the purpose of each paragraph. Examples would include previous research experience, skills, why you suit the institute, why you wish to do a PhD etc. Note your cover letter shouldn't be an expanded version of your CV, but is instead an opportunity to present yourself beyond your bullet-point properties.

A good motivational letter is one where you don't have to state that you are "good" and

“the best candidate they could ever ask for” , but that such statements follow from your experiences described in the letter.

What can help for writing a motivational letter is doing the following:

- Write down three things you are looking for in a PhD project/institute/supervisor
- Write down (at least) three good qualities of yourself. Examples are for instance: “creative”, “independent”, “can stick to deadlines”,
- Now think for each quality of one or two examples in which this is shown. For example for “independent” this could be that you searched for all the literature yourself.
- Now try to cover these qualities and their examples in the motivational letter.

Sometimes in the USA you have to write both a personal statement and a motivational letter. The personal statement can then also be about how you will contribute to the institute or to society.

TIP: often you have more research experience than you are aware of. Writing your own fluid dynamics code / using stellar evolution models during a course is also semi research experience and worth mentioning on a CV or motivational letter (especially if it's relevant)

TIP: ask (very politely) if you can perhaps read / see the motivational letter of student from the year above you. Often seeing different motivational letters helps giving you ideas about how to write your own letter. !!!! Many students don't publish their letters online, but are more than willing to share the letter with you if you ask politely.

Master project summary / abstract

Often not longer than ½ page. Try to emphasise what's new, and what you've done. Also focus on the outcome of the project, rather than the nitty-gritty details.

Proof of English language proficiency

TOEFL, Cambridge, IELTS, etc. NB Some universities do not require an English test if your current language of instruction is English. If a university requires a TOEFL test, be aware that the process of registering for the test, completing it, and receiving the results, takes ~months. The level of these tests should be no problem for anyone enrolled in an English taught degree. Native speakers can skip tests provided they have lived in an English-speaking country. NB: some universities allow you to skip the TOEFL or so if you can show that your master program is taught in English. Please check this on beforehand since the TOEFL can be super expensive.

Presentation about project when invited for interviews

In Europe, if they invite you for the interview round, they might ask you to give a presentation on your current research. For general applications, these usually have to be about 10 min, but if personally invited to an institute you will often be asked to give a presentation of anything between 10-30min. Put enough emphasis on what you have done, and how the research you've done make you a good scientist. Given the short time, try to explain the most interesting aspect of the project clearly, instead of going into

complicated details. Try to work out beforehand who your audience is, whether specialists in your field, or a general audience, and adapt your presentation to them. If you know particular people from your field will be present, see whether you can link their research to your presentation.

Often the audience likes it when you explain the broader picture of your research. So not just what you did, but how your research fits in the greater picture of the field: this shows that you have mature thoughts and understand the context of your own project. And it can (almost) never be bad to explain things that look trivial to you: even if it seems simple, the audience always like feeling smart and being reminded of things they know.

When giving a presentation via Skype, try to reduce the amount of slides as much as possible, and have a clear slide number which you refer to during your presentation. It is important to realize that your listeners may be looking at their own print of your presentation. Think about practising the talk in the same configuration: sitting in front of your laptop. This is a difficult exercise as you are losing a very important communication tool: your body language. Your message all has to come across through your slides and your voice, so make sure to adapt your talk to make this work. Also, it can be intimidating at first that you may not be able to “take the temperature” and check on your audience during the talk: you also lose their body language and facial expressions.

Reference letters

Often you will need at least two, sometimes three reference letters. You don't get to see these, but instead give the referees email addresses in your application documents. Institutes sometimes will automatically send an email to your referees asking them to upload a letter, but sometimes you will receive a link which **you** need to send to your referees so they can upload the letters. Remember to check your spam folder in case they've ended up there...

Reference letter strategy:

First of all, don't feel afraid to ask your supervisors/teachers for a reference letter. It's actually their job to write those and often they are more than happy and honored that you are asking them to write one. Do give them time to write them (this will also benefit yourself) so **start on time (at least 3 weeks in advance)**. However, there are some strategies.

1. Often the most valued reference letters come from supervisors/teachers with whom you have done a project. Since the PhD is research based it is extremely important for the reader to find out more about your research experiences. In the end grades do not matter that much for obtaining a PhD as someone with good grades does not necessarily also make a good researcher. **Try therefore to have at least one of your reference writers to be someone who has worked with you on a project.** For example your BSc. supervisor or current supervisor. If you have worked mostly with a PhD student (for example during your BSc. project) you can still ask their supervisor who will then most likely ask the PhD student what to write about you.
2. It helps if it is someone/ a project where there are **concrete examples of what you**

did. For example “student X individually wrote a N-body code from scratch”. So look for reference writers that can say this about you. This is also the reason why often a teacher from a course where you got a good grade is not necessarily a good letter writer. (Unless you were a very active student during the classes).

3. You can definitely also ask a teacher, but **it would be best if you ask a teacher of a more project-oriented course.** For example the La Palma observation course or a computational astrophysics course where you did as part of the course a project.

4. **TIP:** You can ask your potential reference writer in an email “I was wondering whether you could write me a strong reference letter”.

Especially if you are not sure what his/her experience was it is recommended to write the word “strong” in the request. The person will be aware that if they cannot do this that they should decline. It is usually better to have one strong reference letter than a strong and a bad one. So don’t feel sorry to ask this. (also it might help you remind them it should be a strong letter).

5. **TIP:** This is just an idea; but since the positions you want to apply to continuously change as you look for new positions, **I made a google spreadsheet** with for each application a row consisting of at least the columns: (i) the institute/position, (ii) the deadline for the reference letters (iii) the names of your reference letter writers and a box where you or they can write “done” if the reference letter has been sent (iv) some info about the position and/or institute.

Do really **send your reference letters a reminder** that a reference letter deadline is coming up **2 weeks in advance, 1 week in advance, 3 days in advance and 1 day in advance** (and start calling them if they still haven’t done it on the deadline day)

Don’t feel afraid to spam them with reminders. They will be very happy that you reminded them. (and send the spreadsheet each time so that they can check other deadline)

It can be useful if you send your application documents (CV, motivation letter) to your referees such that they know what you have put in your application. It is important that they can get an intuition of what your application is about, and it is never good to have contradictory information between your application and your reference letters.

Where could you apply for a PhD?

Warning: note that the descriptions below might be outdated / biased from personal experience

We've put together a list of the places master's students have applied to in previous years, sorted per country. Behind each place are the initials from the people who have applied at these places. See the author list for more information on who these are. Do note however that there are many more places at which you could do a PhD than are covered in this document.

Belgium

[KU Leuven](#), CN

The institute of astronomy at the KU Leuven has a very strong background in observational astronomy (e.g. asteroseismology, binaries, interstellar dust etc). They also have access to the Mercator telescope at La Palma. In comparison to other universities they don't have recruitment days but instead offer vacancies throughout the year. If you are interested in doing a PhD at the KU Leuven, but there are no vacancies online, contacting the professors will allow you to see if there are any projects available. However, remember that in this scenario you would probably also need to arrange for funding, i.e. the FWO grant for which you can apply together with your future Belgium supervisor. The deadline for the FWO grant is end of January, and decisions announced at the end of June. Note that this is very late in comparison to offers from other universities.

Canada

Canadian universities have graduate schools, with the possibility of entering as a PhD student if you already have a MSc degree. As a PhD student you still have to take 2-4 courses, and you have to pass the qualifying exam, which consists of all undergraduate physics and requires 1-2 months of full time study. All students get basic funding, which can increase if you take up additional TA work or if you get a scholarship. The application process does not necessarily involve interviews, you might get accepted after only uploading all the requested documents. You will likely need to pay an application fee to apply to a university in Canada. Note that the universities generally reach decisions later than European places, but you can push your local contacts a little bit.

(Most (all?) programs let you transfer from MSc to PhD or do direct entry into a PhD program, so an MSc is NOT a requirement. Qualifying exams vary from school-to-school and department-to-department)

[University of British Columbia](#), Vancouver, ZP, LD

Strong in cosmology, planetary sciences and compact objects. They require a letter of motivation of 6 pages or less (which is a lot!) that wants you to talk about your research experience, a possible research project (more like what research you would do if you could choose anything, doesn't have to be what you end up doing) and your leadership skills. UBC is pretty good, you can hear back from them as early as January. Their application due date is also early, in November.

[McGill University](#), Montreal, ZP, LD

Great place to study compact objects, planetary sciences, astroparticle physics and cosmology. Also a long-ish application. They get back to you really late, not before late-March.

[The University of Toronto](#), Toronto, LD

Really good for pulsar stuff, Marten van Kerkwijk has strong connections to the API. Similar application process to McGill, and they also do not get back to you before late March.

France

The only way you will get through any application process is to have help from a Frenchman. While there are a lot of interesting positions available, many will have outdated websites entirely in French, and geared towards French applications. That being said, if you do apply, you might find you have good chances being the only foreign applicant. Rather than trying to make your way through a website, contact the institute for help.

Germany

The deadlines for Germany universities are often quite early in the year, with most requiring applications to be submitted before the start of November. Most PhD positions seem to be 3 years, but some Max Planck institutes give you a fourth year (either as PhD student or a postdoc).

[IMPRS Bonn & Cologne](#), Bonn, ZP, CN, DG, LD

Areas include radio and massive stars. Top candidates are invited for Skype interviews midway through January, and offers are made based on those.

You may be invited to visit the institute after interviews. It's a good idea to do this so you can see what it would be like to work there.

[IMPRS Heidelberg](#), Heidelberg, DG, JvE

Areas cover almost all of Astrophysics, with in total 6 physics/astronomy institutes in Heidelberg. Expertise especially in gamma-ray astronomy (HESS, CTA etc.). Some candidates are invited for Skype interviews, some for a visit. The visits are scheduled during two slots (mon-tue or thu-fri), and are usually in the same week as Munich. When visiting, prepare for a different kind of presentation; as the institutes are separated, you will give one-on-one presentations during the interview. This can be very nice, especially if you tailor the presentation with a lot of back-up slides for a possible discussion afterwards. The same goes for Skype interviews.

[IMPRS Garching](#), Munich, DG, JvE

The campus in Garching is the largest concentration of astronomers in Europe, and houses four institutes: MPE, MPA, ESO and the university. Hence, all areas of astronomy are covered. Most positions are offered by MPE and MPA, while ESO usually only has a few positions every year. However, ESO pays significantly more than the Max-Planck Institutes.

Many people (~300) apply, and around 50 are invited for interviews. However, most interviews are not scheduled beforehand, and there is a lot of time to talk to potential supervisors over coffee. ESO offers a fixed number of positions, without an attached project. Instead, the best candidates are offered a position, after which they can choose the project. So if you are interested in an ESO position, try to talk to as many people as possible, in interviews and breaks. They all contribute to the decision.

Italy

See France.

The Netherlands

Terms & conditions for PhD *employees* as compared to status in other countries is pretty good.

[Anton Pannekoek Institute](#), Amsterdam, All

The API does not necessarily invite all their own master students that have applied.

[Leiden](#), DG, JvE, CN

Leiden organises a 2-day programme for ~35 students. Day 1 consists of presentations, and day 2 of interviews. Next to general PhD projects, the university offers the DeSitter-fellowship, which is a position in (theoretical) cosmology where the successful candidate(s) can design their own project. After the application days, candidates send in a ranking of favourite projects. This is then matched to the supervisor's preferences.

[Groningen](#)

Smaller institute than Amsterdam and Leiden, but very good and 'gezellig'. Does not organise PhD days, as it usually has only a few positions to offer. Lot of research in large scale structure and galaxy formation/evolution.

SRON/ASTRON

These research institutes sometimes offer PhD places linked with universities in the Netherlands. See institute mail circulations and the AAS job website.

Spain

[Instituto Astrofísica de Canarias](#)

Large institute, includes the Centro de Astrofísica en La Palma, and the observatories both at La Palma (Observatorio del Roque de los Muchachos) and Tenerife (Observatorio del Teide). The institute where most people actually work (close to the university, but a separate building/institute) is situated in La Laguna, Tenerife (Canary Islands). Their PhD positions (typically 4-5 positions are advertised the past years) are typically advertised end of February, with the deadline for applications end of March.

Sweden

[University of Stockholm](#), DG

Positions announced under vacancies on the website of the department of astronomy. Areas include computational astrophysics, high energy astrophysics, observational astrophysics.

[University of Lund](#)

A lot of theoretical work in exoplanets and planet formation, and theoretical and computational work on stellar evolution, stars dynamics, binaries. In the domain of Galaxy evolution, there is a computational group focusing on star formation in galaxies and feedback processes, a Galaxy dynamics group with experts on Gaia, and a stars group (stellar spectroscopy, large surveys, Galactic archaeology). Small but very active institute (also in a brand new building). They host many events/conferences and work together a lot with other Swedish universities and institutes in Denmark.

Switzerland

Swiss universities often require two one-page documents, one being a statement of interest and the other being a description of research experience. Deadlines seem to be around the start of January.

[ETH Zurich](#), DG

Positions announced on job register. Areas include galaxy formation, AGN, etc. PhD positions are 4 years, including teaching. Literally drowning in money, but only have few PhD places available each year.

[University of Zurich](#), DG

Positions announced on jobregister. Mainly theoretical & computational astrophysics.

United Kingdom

Obtaining a PhD position in the UK often involves two parts: getting the position, and getting a scholarship to support that position. Deadlines for positions are generally towards the end of January, but scholarships for EU students sometimes require applications at the start of December. Filling in details and uploading documents for UK applications can sometimes be a long process, so start on time with these. Each institute website should have information on possible scholarships for positions, but these can be difficult to find. UK universities often only send invites or offers after continental institutes have made their offers, so it could be a gamble to wait for offers from England.

[Durham University](#), Durham, LH

Durham University offers lots of astrophysics options. For the theoretically minded, there is the Institute for Particle Physics Phenomenology which crosses over into dark matter, neutrino and physics beyond the standard model. The Centre for Extragalactic and Astronomy (CEA) is targeted at experiments across the EM spectrum including LOFAR, ASKAP and Subaru. The cosmology work in the ICC (Institute for Computational

Cosmology) has lots of STFC funded PhD positions every year, including work into N body simulations that can trace out the cosmic web, large scale structure projects with lensing and modified gravity. Some PhD students will have access to COSMA as well, one of the largest computational science facilities in the world. Numerous PhD studentships are available at Durham (CEA, ICC and IPPP) including Royal Society funding, ERC funding, STFC studentships for home students and also UKRI positions as well.

[University of Cambridge](#), Cambridge, JvE, DG, LD, LH

The Institute of Astronomy at Cambridge is a broad institute with a large group in X-ray astronomy (which has several ties to the API X-ray group). There is also the Cavendish Laboratory which is mainly radio astronomy and instrumentation. If you are more interested in the theoretical mathematics and physics syllabus, Cambridge has the acclaimed DAMTP (Department of Applied Mathematics and Theoretical Physics) which work on the dynamics of accretion discs, AGN and other astrophysical phenomena. If you are thinking of applying to DAMTP, note that they often look for something equivalent to their Part III Mathematical Tripos; with lots of students choosing to use an extra year of qualification to complete the Tripos. You can apply to more than one institute, but you need to fill out a separate application form for each institute, and pay the application fee for each. Applying through the 'GRADSAF'-system seems to be a first test of intelligence and perseverance. And you do need to pay an application fee to apply. European students need to search for fellowships, although the Isaac Newton Fellowship is provided by the Institute without a separate application. Interviews are mid-March, which might be difficult as other offers will be given earlier. Make sure to get in touch with the graduation admission officer of the institute (Debbie Peterson in 2015/2016) - she is very nice and helpful when searching for information about funding. If you are not a UK or EU student make sure you get onto applications extra early as your dates will be first. Funding options include:

- [Cambridge Trust](#)
- STFC (UK version of the NWO) (Fees only for EU-students)
- The Isaac Newton Studentship
- [Gates Cambridge](#) (Note the early application deadline!)
- College specific scholarships.

[University of Oxford](#), Oxford, LD

Similar to the University of Cambridge, Oxford offers projects on a wide range of projects but requires some perseverance in the application process. Applicants are required to have first class/upper second class grades, similar to at least a 7 on average in the Netherlands (although higher will of course help). You'll also need a max. 2 page letter of research interests/experience, 3 reference letters and an English language test. To apply for funding options, make sure to apply by the January deadline. Most of the funding options don't require any extra application - even some prestigious ones, such as the Clarendon Fund. They also respond late - mid/late March and you need to pay a fee to apply.

[University of Manchester](#), Manchester, LD, LH

The Jodrell Bank Centre for Astrophysics is great for doing radio astronomy. They have the Lovell Radio Telescope and the SKA headquarters. Lots of members of JBCA worked on the Planck legacy project (especially foregrounds for the CMB and instrumentation) and many PhD students are working on future surveys such as the Simons Observatory, Euclid, LiTEBIRD, LSST, DES and CMB S4. Theory projects are available, especially with a large growing group aimed at spectral distortions of the cosmic microwave background and Sunyaev-Zel'dovich clusters. The spectral distortions group currently takes on 4 students and potentially more in the future. A lot of projects are funded by the STFC (only available to UK/EU students, not international students), which means you only get your tuition fees and no living expenses covered if you're a non-UK student. The university also has the "President's Doctoral Scholar Award" which does grant you enough money. European Research Council grants are available for numerous members of staff working on pulsars, cosmology and star formation. Several members of staff have funding from Royal Society grants as well. The deadline for applying to this is early, so make sure to contact potential supervisors already in December, they are very happy to help out. Unlike other UK universities they get back to you at a reasonable time, end of February/start of March.

[University of Southampton](#), Southampton, DG

Strong in accretion onto compact objects. Scholarships include the Mayflower scholarship, in which you teach next to your study in swap for the scholarship.

[University of St Andrews](#)

Strong in solar dynamics and astrostatistics.

[University of Birmingham](#), Birmingham, CN

The institute of astronomy at the university of Birmingham is strong in the fields of instrumentation, gravitational waves and stellar evolution. Some of the PhD vacancies might be fully funded (i.e. tuition fees + living expenses), but don't be afraid to ask for more information since most supervisors understand that the funding system is weird for foreigners. The deadline for applying at Birmingham is early in January for which they require references, a cv and a cover letter. Interviews can take place over Skype or in person. It is not necessary to provide a TOEFL or something similar, but be aware they will require this if they offer you a position.

United States of America

When considering applying for a graduate position in the USA, there are some vital differences compared to Europe. First of all, most programs do not offer a separate PhD position, but only a combined programme with 1 or 2 year(s) of courses. During these courses, you talk to potential supervisors about interesting projects. Before entering the programme, you might need to pass both a general and physics-specific GRE, which takes time and money to arrange. Funding can also be a bit more difficult compared to the EU (with maybe the exception of the UK), as grad students do not automatically receive payment. However, most physics/astronomy positions are actually funded.

As both the system and the academic culture in the USA are quite different from the Netherlands, it might be useful to talk to staff members who have lived/worked there.

There are many universities to choose from in the USA, covering a very wide range in quality. The best advice I (JvE) received on searching for universities was to search between only the best possibilities, as there are great alternatives in Europe and changing continents has to be worth it. In that case, Google and university ranking are your friends. As always, advice from staff members/your supervisor will be of great help as well.

GRE

Here's a rough list with universities and whether they dropped the general/physics requirement

https://docs.google.com/spreadsheets/d/19UhYToXOPZkZ3CM469ru3Uwk4584CmzZyAVVwQJJcyc/edit?usp=drive_web&oid=105945932062731719388

What should you consider when choosing a position?

- Do I like the subject?
- Is there some potential in the field?
- Does the institute have access to useful telescopes/satellites²?
- Can I become an expert in a technique or topic? I.e. can I do something new?
- How often do I have to TA?
- Will the supervisor have time for me?
- How large is the group with which I would work? And is it a start-up group, a up-and-running group, a small-but-established group, or an 'empire'-group? See ['Mastering your Phd' page 2-5](#).
- What do other students working with the supervisor think of them?
- Can I visit conferences/workshops/other institutes?
- Do I want to live in this city/country (for 3/4/5 years)?

How do I prepare for an interview?

Disclaimer: Interviews at all universities for PhD positions are almost always a little bit different depending on the institution. The important thing to note is: keeping an eye on the points listed below will improve your interview technique, regardless of the format.

- Read around the subject of your project
 - It's far too common to prepare the notes from your master's project as you would in your actual project interview. Consider some of the finer points of the project, some of the extensions and how it could apply to projects going on in the institution to which you are applying.
- Careful when you don't know
 - One of the biggest pieces of feedback I have heard from PhD interviews: students not understanding or knowing the answer bumbling to a conclusion. There is absolutely nothing wrong with not knowing the answer

² Don't trust websites - according to them, all institutes have access to all instruments...

to a question. This is a very common hurdle that you will hit in your PhD. So one of the key things interviewers (from experience) look for is your approach to 'not knowing'. The key is to consider the question carefully, explain that you are unsure but then expand into how you would find out the answer. Then listen to the suggestions of your examiner.

- This varies from institution to institution. Durham and Manchester have been very accommodating to uncertainty, some other UK universities are less so. I cannot comment on the European continent (would be great if someone could!) but, usually a touch of humility and willingness to learn goes a long way!