Learning the ropes of the Dutch physics community
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Welcome to the Dutch physics community! The Foundation for Fundamental Research on Matter (FOM) is proud that you are considering the Netherlands as your working environment. Dutch physics is a ‘close knit’ community in which we hope you will find your way as quickly as possible. In order to pave your way we will explain to you what FOM entails. We describe the most important funding schemes for physics research in the Netherlands, inside and outside the FOM organisation. We also offer you some glimpses into the research of FOM scientists in the Netherlands. These just give a taste of the research FOM does. If you would like to read more about FOM’s research then please browse through our highlights on the FOM website. See www.fom.nl/learning-the-ropes for hyperlinks to relevant information.
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1. FOM: a unique combination of tasks

1.1 FOM: funder, employer and organiser

The FOM organisation essentially combines three roles: Firstly, FOM is an agency funding a significant fraction of physics research (through the means of the so-called Projectruimte en Vrije FOM-programma’s, see section 4); a significant fraction of this by means of multidisciplinary programmes. Secondly, FOM is the parent organisation of three physics research institutes, i.e. AMOLF and Nikhef in Amsterdam and DIFFER in Eindhoven/Nieuwegein. Thirdly, FOM plays an important role for Dutch physics in organising the field, bringing the physics community together (e.g. in the yearly Physics@FOM Veldhoven meeting), establishing new co-operations and initiatives to gain support for the field, such as the development of the so-called Sectorplan for Physics and Chemistry together with the chemistry community, and most recently the ‘Vision paper 2025 Chemistry and Physics: Fundamental for our Future’. FOM is an organisation focused on the future: research programmes are regularly re-evaluated and new directions are identified.

1.2 FOM people

FOM employs approximately 1100 employees. These 1100 are comprised of some 80 permanent academic staff, 190 postdocs, 510 PhD students and 320 technical and other staff. Research is done in its three institutes and some 180 university-based teams (called ‘werkgroepen’), spread over 11 Dutch universities and the institutes. The total scientific output each year comprises about 100 PhD dissertations and 1100 scientific articles. Its annual budget is around 100 million euros, of which about 70 percent comes from the Netherlands Organisation for Scientific Research (NWO).

1 E.g. in 2013 a new Advanced Research Center for NanoLithography (ARCNL) was established together with the University of Amsterdam, the Free University and the company ASML.
1.3 FOM’s history in a nutshell

FOM was founded in 1946, after World War II when Dutch physicists realized that physics in the Netherlands had a lot of catching up to do. Already then the founders gave FOM the following mission:

“to advance fundamental scientific research on matter in the Netherlands - including that inspired by possible applications - in the general interest and that of higher education.” The word matter (‘materie’ in Dutch) rather than physics was chosen deliberately in order to bridge to materials science, chemistry etc. Hence the name ‘Stichting voor Fundamenteel Onderzoek der Materie’ (‘Foundation for Fundamental Research on

CERN experiments observe particle consistent with long-sought Higgs boson

On July 4 2012, the ATLAS and CMS experiments presented their latest preliminary results in the search for the long sought Higgs particle. Both experiments observed a new particle in the mass region around 125-126 GeV. The discovery of a particle consistent with the Higgs boson opens the way to more detailed studies, requiring larger statistics, which will pin down the new particle’s properties, and is likely to shed light on other mysteries of our universe.

A large number of Nikhef researchers was and is closely involved in the Higgs study. Professors Stan Bentvelsen and Frank Linde received the Dutch Physics Prize for their contribution.
Matter’). It is interesting to note that with the inclusion of application-inspired fundamental research the founders were quite ahead of their time. The FOM institutes were also founded early on:

- AMOLF was founded in 1949 as an institute for Atomic and MOlecular Physics (‘Fysica’ in Dutch); AMOLF presently serves as an institute which can quickly focus its research on relevant newly emerging fields. Its present research lines are nanophotonics and biophysics.

- Institute for subatomic physics Nikhef (formerly Nederlands Instituut voor kern- en hoge energie-fysica) was founded in 1946. Nikhef nowadays coordinates most of the experimental subatomic physics in the Netherlands via a cooperation agreement with the experimental groups of four universities (RU, UU, UvA and VU).


1.4 The whole spectrum of fundamental research

FOM is proud to shelter the whole spectrum of fundamental research, ranging from curiosity driven research to that inspired by the needs of society and industry. By introducing the Industrial Partnership Programmes in 2004, FOM took an important step to stimulate collaborations between industry and research in academia and institutes. Every few years FOM issues a new strategic plan for the coming five years, following developments in science and society. One of the main points of the strategy for 2010 – 2015 is a number of initiatives to expand the fundamental energy research, in view of the energy and climate problems facing our society. The transformation of DIFFER is one of the key items of this strategic choice.
The search for quantum space-time

Physicists from FOM at the Radboud University Nijmegen search for the theory of quantum gravity. This theory would unite Einstein’s general theory of relativity with quantum mechanics. The researchers will approach the problem from the perspective of quantum field theory as well as the perspective of non-Euclidean geometry. Quantum gravity describes the characteristics of space-time at the very smallest scale, the so-called Planck length (about $10^{-35}$ metres). The researchers hope to unravel this microscopic space-time structure within the programme and hope to find that the theory would be able to explain what we see at the macroscopic scale in the universe. Other overarching questions are: Why do masses attract each other? What did the universe look like shortly after the Big Bang? And do wormholes exist and is the possibility of time travel real?
2. FOM and NWO

FOM is part of the Netherlands Organisation for Scientific Research (NWO) located in The Hague: FOM receives a major part of its funds from NWO, for the FOM institutes, programmes and the ‘Projectruimte’. In order to facilitate the contacts with the other disciplines (‘gebieden’) of NWO and with the central NWO organisation, there is a ‘Gebied Natuurkunde’ (physics division) within the NWO organisation; this small office in The Hague also runs a number of talent programmes (Veni, Vidi, Vici, see 5). We sometimes use the term FOM/N to denote FOM and the Gebied Natuurkunde, as to emphasize their interrelation.

ARCNL conducts fundamental research in relation to nanotechnology

In January 2014 the Advanced Research Center for Nanolithography (ARCNL) was founded. ARCNL is a new, public-private funded research center initiated by ASML. Partners are ASML, FOM, NWO, UvA and VU. Prof.dr. Joost Frenken has been appointed as the first director of the ARCNL. The new research center will conduct fundamental research relating to nanolithography, the most important technology for manufacturing computer chips and processors in PCs, smartphones, and tablets. Initially, the centre will focus on the physical and chemical processes which are crucial for Extreme Ultraviolet (EUV) lithography. ARCNL will strengthen the knowledge base of nanolithography and thus make an important contribution to this technology, indispensable for innovation in the global semiconductor industry in the coming years.
3. FOM organised to everyone’s benefits

3.1 FOM governance

FOM has an executive board (UB) consisting of five members, typically four top scientists with different backgrounds, and one head of research from industry. The Governing Board, which meets three times a year, has up to thirty members, about two thirds of whom are renowned scientists from all physics disciplines. The rest consists mostly of research leaders from industry and other research organisations.

Dr.ir. Wim van Saarloos, a former professor at Leiden University, is director of all FOM employees and head of the FOM Office in Utrecht, where about 55 employees assist (administratively) the research carried out in the field. At the FOM Office you will find the personnel department (CPD), the finance department, FOM Communications and Research Policy department, which is where the programme officers work.

Sascha Caron
Tenure tracker, Assistant Professor
Experimental High Energy Physics
Radboud University Nijmegen and Nikhef
Origin: Germany
In the Netherlands since: 2011

The Netherlands is a great place for research. I like most the open mindedness of many Dutch researchers.

My advice to newcomers in Dutch physics?
I feel a tendency to decrease funding for fundamental physics in the last years. I expect the situation will improve in the long term if we continue to show the importance of fundamental physics to the Dutch society.
Each of the programme officers serves as the contact point for a number of ‘werkgroepen’ and also for you!

3.2 FOM: keeping strong ties with the research community

FOM fosters close ties with the research community. This means that FOM takes an active role in identifying new opportunities for our field, and in bringing together researchers to formulate new initiatives. These are not only initiatives aimed at creating for instance new thematic programmes, but also actions aimed at the support and health of our field at universities, and of Dutch science in general. FOM therefore also carries out a leading role in offering special courses on soft skills to graduate students (such as giving presentations, dealing with your supervisor, career orientation after your PhD). We are able to do this

Nanoscientists find long-sought Majorana particle

In the 1930s, the brilliant Italian physicist Ettore Majorana deduced from quantum theory the possibility of the existence of a very special particle, a particle that is its own anti-particle: the Majorana fermion. Scientists of FOM and TU Delft’s Kavli Institute have succeeded for the first time in detecting a Majorana particle. The ‘Majorana’ could be crucial in the development of a quantum computer. In October 2013 was announced that academia, industry and the government will jointly set up the ‘QuTech’ Institute to realise such a next generation computer. Under the leadership of FOM focus group leader professor Leo Kouwenhoven QuTech must form the bridge between scientific research on the development of the quantum computer and the Dutch high-tech industry.
because the graduate students and postdocs associated with FOM projects are actually appointed as FOM employees, even if they work at one of the universities. This forms an important part of our tie both with the young researchers, and with the larger research community. It also implies that when applicants have their first FOM grant approved they receive a confirmation from FOM stating the budget and the positions approved. When they have selected the candidate(s) FOM will be informed (usually through the personnel department at your institution) and will take care of the contract. We do not take lightly the responsibility that we entrust young people to the hands of senior researchers: every new position is formally awarded to a FOM approved workgroup (‘werkgroep’). The FOM workgroup leader (‘werkgroepleider’) has the final responsibility for the employees. This hierarchical position implies the official ‘werkgroepleider’ has a number of personnel related tasks, such as performance interviews and communication about FOM courses and our yearly meeting.

Images through completely opaque layers

A discovery by FOM workgroup leaders of the MESA+ Institute at the University of Twente has been ranked as one of the ten most important breakthroughs in physics research in 2012. Professor Allard Mosk’s group succeeded in making images through completely opaque layers. They let a laser beam fall from different angles on a scattering surface of frosted glass and a computer accurately registered how much light came back from the hidden object. The researchers expect that these results will yield new microscopy methods with which high-resolution images can be formed despite light scattering.
4. FOM funding system: how to get into it

FOM has a range of funding instruments for supporting physics research. Each instrument has its own specific objectives and procedures for application, evaluation and selection.

4.1 FOM Projectruimte, also attractive for newcomers!

The Projectruimte provides funding for small-scale projects in fundamental physics research that have an innovative character and a demonstrable scientific, industrial or societal urgency.

Anne S. Meyer
Tenure tracker, Assistant Professor
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Faculty of Applied Sciences
Kavli Institute of Nanoscience
Department of Bionanoscience
Origin: USA
In the Netherlands since: 2011

Coming from the US, I enjoy the relaxed scientific atmosphere in the Netherlands that makes it possible for professors to eat lunch with students and really get to know their departmental members, no matter what their professional level is. The flip side of having such a flat social structure is that students typically feel free to tell you exactly what they think about your course or your suggestion for their experiments - both a good and a bad feature!

My advice to newcomers in Dutch physics is to submit grant applications on as many different topics as you can, to as many different granting agencies as you can, with as many different combinations of applicants as you can. It’s hard to predict what will get funded!
A maximum amount of k€ 400 is awarded. Proposals from disciplines related to physics are eligible for this grant as long as the research proposed makes a sufficient contribution to physics. In the case of a collaborative project or a significant investment component, the amount awarded can be increased to a maximum of k€ 550. Since October 2010 an additional budget of yearly M€ 3 is available within the so-called Sectorplan for physics and chemistry. This additional budget is available for projects that fall into certain themes (‘zwaartepunten’) at their respective universities. Feel free to consult the programme officer of the programme or your ‘werkgroep’ if you need advice on whether a possible grant proposal fits in any of these themes.

For you, as a newcomer to the Dutch physics community, the instrument FOM Projectruimte is attractive, not only because these grants are a good way to quickly get funding for a new and innovative research line, but also because new permanent academic staff and tenure-trackers can request a preferential treatment. This implies that if an application will be assessed within the top 50 percent of the batch, it will be awarded. Per batch a maximum of two requests for preferential treatment will be granted.

One of the conditions for a preferential treatment for new permanent academic staff and tenure trackers is that the request should be submitted within two years after the first permanent appointment or tenure-track position within the Netherlands. Another condition is that you have gained no previous support by the FOM Projectruimte or other FOM funding instruments, nor a NWO Vidi or Vici grant.

Proposals for the FOM Projectruimte can be submitted continuously. The proposals that FOM receives are evaluated in order of submission in batches of 15 to 25 proposals, within three to six months after being submitted. On the website you will find a description in which all instructions for applying are described.

Note that you should have a contract of at least 80 percent at the research institution where the major part of the research will be carried out. And you need to prove that you will have a prospect of permanent employment at the end of your contract, like a tenure-track position.
Before you draft your proposal, please take these extra tips to heart: your proposal will be evaluated by a wide jury (typically 12 members), largely composed of members who are no specialists in your field. Individual members rank all proposals based on the proposal itself, the referee reports, and your rebuttal to these reports. This means that your proposal should be able to convince two different types of scientists: first of all it is important that the non-expert jury members will by reading the first one or two pages already get a feeling that you are proposing an innovative and exciting new project, that they would love to see carried out. At the same time your proposal should have sufficient detail and explanation of how your project fits into cutting edge research in the field, so that the referees recommend funding your project. These two different requirements take some special skills in writing a convincing proposal. Our advice is that you should ask some of your colleagues, who have a good track record in getting these grants, to read a first draft and give you critical feedback – be prepared that when you do this for the first time, it may require several revisions, but the investment in time is likely to pay off!

4.2 Funding of FOM research programmes

Vrije FOM-programma’s

Each year there is a single round for applications for Vrije FOM-programma’s. A Vrije FOM-programma is submitted by a consortium of researchers within the Dutch physics society. In the yearly round all programme applications are in open competition with each other. Programmes should have a clear objective, focus, cohesion and added value (compared to individual small-scale projects). The scientific quality must of course be convincing. The preliminary proposals that are submitted are first evaluated on the basis of oral presentations and recommendations from advisory committees. The final versions of the proposals that have passed the first round are then first evaluated by international experts and finally defended in a presentation before the FOM Executive Board, enlarged by a number of expert scientists. Based

3 Unfortunately, due to budget cuts, there is no round in 2015.
4 To be a co-applicant, you have to fulfil the same requirements as mentioned for a Projectruimte proposal, i.e., you should have a permanent position or the prospect of getting one, e.g. through a tenure-track position or a Vidi or Vici grant.
on these evaluations, FOM’s Executive Board awards a number of
programmes for a predetermined number of years. The Executive Board
applies scientific, programmatic and science political criteria with regard
to the evaluation and selection. The entire process takes up
approximately nine months.

The budget of a ‘Vrije FOM-programma’ is not prescribed, but depends
on the size of the consortium and its scientific goals. The smallest
programmes are just over M€ 1, while the largest ones have a budget of
around M€ 3. For a successful application, the science case is leading:
is an interesting problem being tackled? Will the coordinated effort of the
programme give the researchers a real chance to achieve breakthrough
results or bring them to the forefront of international developments?

In short a Vrije FOM-programma is a good way to really get momentum
on a common theme with a number of colleagues. In practice, also young
researchers who have recently established a group in the Netherlands
are successful co-applicants of Vrije FOM-programma’s. The fact that
you do need to invest time with colleagues to define a good theme and

FOM researchers
design new type of laser

Researchers from FOM, Leiden University, Eindhoven University of
Technology and Philips Research have made a new type of laser. This laser
makes use of light beams that are trapped on a metal surface, so called
surface plasmons. As these trapped light beams are far more compact
than light in free space, they offer the possibility of making ultrasmall
lasers which can for example be used in computer screens. What
makes the new system unique is that in various ways, the
researchers have demonstrated that the laser light in their system really
does originate from surface plasmons.
consortium means that you should start preparing such a proposal early. Again our advice is to ask senior colleagues, who have recently been granted a Vrije FOM-programma, for advice. Neither hesitate to consult our programme officer responsible for the Vrije FOM-programma’s (see our website).

Very large or special programmes could result in a FOM Focusgroup, with a budget for ten years.

**Industrial Partnership Programmes (IPP)**

In 2004 FOM introduced the Industrial Partnership Programmes. What is special about an IPP is that FOM staff carries out fundamental research over a period of several years in close contact with industrial researchers in areas with a good potential for innovation and challenging scientific questions. It is therefore collaborative research aimed at

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**AMOLF researchers peek at the forgotten component of light**

Physicists from FOM Institute AMOLF have simultaneously measured the electrical and magnetic fields of light. With such a measurement scientists can better understand the behaviour of light in nanostructured metamaterials — for example the material from which invisibility cloaks can be made.

Light consists of both electrical and magnetic fields that vibrate with a frequency of 300 trillion times per second. These metamaterials make fascinating effects possible, which make fascinating effects possible: for example these can be used for lenses with ultra-high resolutions. These effects emerge from the interaction between the material and both the electrical and magnetic fields of light. Consequently researchers can no longer neglect the magnetic component.
delivering ground-breaking innovations. FOM has outstanding and often long-term relationships with industrial partners. Companies not only value the results from research with FOM but also the quality of FOM’s researchers, many of whom later take up positions in industry.

The essence of an IPP is that the funding of a programme is shared roughly 50/50 by FOM and one or more companies, and that the company’s contribution should be in cash not in kind. This implies that the initiation of a specific programme is always done by the researchers from public parties (universities, FOM institutes) and industrial labs together, and that the preparation of a successful proposal, for which a company is willing to put money on the table, easily takes up a year. Often, the programme officers of the FOM IPP office take a very active role in this too, as they are familiar with both parties. The programme officers are willing to work with you in order to bring in industrial partners, and you should feel free to contact them, even if you only have a rudimentary idea or contact. A good place to brainstorm openly with them is at the yearly Physics@FOM Veldhoven meeting, where they also organise a network event for researchers and companies.

Proposals for IPP programmes can be submitted continuously, so there is no actual deadline to worry about. In practice the timeframe is dominated by the preparatory phase during which the research theme is determined and industrial commitment is obtained. As explained above, the FOM IPP office takes an active role in this.

**Special grants for female scientists**

Are you a female physicist and do you wish to pursue a career in Dutch physics? FOM has a successful way to bring more female scientists into the Dutch physics community permanently. The programme is referred to as the FOm/v programme\(^5\). FOM has two types of grants within this programme, the FOm/v grant and the so-called Bridging grant, which might be interesting for you as a female scientist in the Netherlands. The individual positions for postdocs are intended for women who wish to develop a long-term career in Dutch physics. The advantage of the

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\(^5\) The name refers at the fact that in older Dutch job advertisements the abbreviation ‘m/v’ was used to indicate that both men and women (‘vrouwen’) could apply.
grant is that it offers women a position for a maximum of five years at a crucial and vulnerable point in their career, thereby enabling them to develop a solid position for the future.

**FOM/v grant**

FOM funds a postdoc position for a maximum of three years spread over a period of at most five years. The condition is that you have organised a period of one to two years (usually a postdoc position) at a foreign institute in conjunction with this (not paid for by FOM). The candidate is free to plan the period abroad either before or after the period funded by FOM. The grant can be applied for by women who have just gained their doctorate or by those who already have a postdoctoral position abroad or who have almost completed this. The budget for the individual postdoc position is a personal budget for a maximum of three years.

By in vivo experiments with fly embryo’s researchers of the FOM Institute AMOLF and from Marseille and Paris clearly demonstrated that cells require a protein called septin to build a ring of actin filaments. This ring of proteins is crucial to drive cell division. Due to the complex molecular composition of cells it is difficult to conclude on the mechanism of ring formation. To overcome this challenge, the researchers purified septin and actin filaments, and looked at mixtures of these proteins by both fluorescence microscopy and electron microscopy. They discovered that septins are able to bundle actin filaments into tightly packed, contractile rings.
Bridging grants

Bridging grants are intended to support faculties and research institutes during the appointment of a female scientist (Dutch or foreign) to a tenured position. Typically, the grants are used when a faculty or institute has spotted an excellent candidate, but does not yet have the funds to appoint her. The FOM grant can then help to ‘bridge’ the gap to the moment the institute can provide a position, for a maximum of five years. Since it is important that the host institute does guarantee a regular position, the application must be submitted by the host institute.

There is flexibility in the precise implementation, such as a contribution towards a tenured appointment as an assistant or associate professor (possibly after being employed at a foreign university) or a financement of the difference in salary between an associate professor and a professor.

Steering by peeking:

We all know Schrödingers cat in a box, being both dead and alive at the same time. When the box is opened completely, the state of the cat will be either dead or alive. By slightly lifting the lid, it is possible to acquire only a little bit of information, while maintaining the fragile quantum state. In an experiment by scientists from FOM and Delft University of Technology, the nucleus plays the role of the cat. They have manipulated a quantum particle, merely by looking at it in a smart way. By adjusting the strength of their measurement according to earlier measurement outcomes, they managed to steer the particle towards a desired state.
To ensure maximum flexibility, applications for a FOM/v bridging grant can be submitted continuously. The applications are judged on a case-by-case basis. As with many other programmes, the programme officer responsible for the FOM/v programme will be happy to advise you should you consider applying.

4.3 Thematic funding inside and outside FOM

Besides the ‘open’ funding schemes mentioned above, FOM also regularly organises thematic calls, often in close collaboration with other divisions of NWO and sometimes even with private partners (some IPP programmes launch a thematic call). Several of these are in connection with the so-called ‘topsectors’ policy of the government, to strengthen interactions between companies and science. We refer to the FOM website for up-to-date information.

**Ageeth Bol**  
Tenure tracker, Assistant Professor  
Applied Physics  
Eindhoven University of Technology  
Country of origin: USA  
In the Netherlands since: 2011

*Work-Life balance is in general better in the Netherlands than it is in the USA. A faculty position in the Netherlands is not a 9 to 5 job, but no-one will raise an eyebrow if you take a two-week holiday.*

*My advice: getting funding for research is even more important in the Netherlands than it is for example the USA, since without funding you won’t be able to hire PhD students. My advice to new tenure trackers is to find a mentor with a lot of experience in obtaining funding in the Netherlands who can guide you through the proposal writing process.*
5. Talent programmes of NWO

Within the so-called Innovational Research Incentives Scheme (‘Vernieuwingsimpuls’) NWO provides three types of grants for talented, creative researchers who engage in innovative research:

- Veni, for researchers who have recently obtained their PhD;
- Vidi, for researchers with several years of research experience after their PhD;
- Vici, for senior researchers who have demonstrated an ability to develop their own line of research.

Fusion reactor wall manages unexpected shielding against extreme heat loads

Researchers of the FOM Institute DIFFER have discovered that the wall material of a fusion reactor can shield itself from high energy plasma bursts. The wall material tungsten seems to expel a cloud of cooling hydrogen particles that serves as a protective layer.

An international collaboration building the fusion reactor ITER, designed to be the first in the world (March 2014) to produce net power from fusion. The heart of a fusion reactor like ITER contains an extremely hot plasma, from which short, intense energy bursts rain down on the reactor wall.

In ITER, the tungsten wall will face powerful discharges of several gigawatts per square meter, several times per second. However, researchers at FOM Institute DIFFER discovered that under some conditions less than half of that incoming energy actually hits the surface.
The difference between these so-called talent schemes and the funding schemes mentioned above is that the ‘Vernieuwingsimpuls’ (Veni & Vidi) focuses specifically on young researchers in the build-up phase of their career. Of course you will need to present a convincing research plan, but also your curriculum vitae and personal presentation of the proposal form an important part. In the final round the candidates are always invited for an interview by the panel. Note that the ‘Vernieuwingsimpuls’ grants are offered across all disciplines, not just physics, but also chemistry, life sciences etc.

For physics, the ‘Vernieuwingsimpuls’ is handled by our NWO-N (‘natuurkunde’) office at NWO. All ‘Vernieuwingsimpuls’ schemes have yearly deadlines which are the same for all disciplines, so be aware of these.

As with the Projectruimte proposals, do realize that Vernieuwingsimpuls proposals are judged by a relatively wide jury, most members not being experts in your field. But proposals will go to referees too, so as in the case of the Projectruimte, you will need to convince both of them. Keep all this in mind when writing your proposal, and do ask experienced colleagues for feedback. Moreover, since an interview is always part of the final selection of the laureates, it is important to do well here too. Do make sure you practice your presentation with colleagues from various backgrounds, and preferably colleagues who are critical and who know the do's and don'ts.

If you have just arrived in the Netherlands, especially Veni and Vidi grants offer important opportunities to obtain funding for building up your group. Especially when you have a tenure track appointment, obtaining a Vidi grant is often a big plus in the tenure decision.

You can apply for all Vernieuwingsimpuls positions from abroad, but in case you do so it is important, in practice, that you have a firm backing from the host institute, e.g. a promise of a future position or of the availability of sufficient lab space.

5.1 Veni

If you have just completed your PhD, i.e. within the last three years, then applying for a Veni might be an attractive instrument for funding your research. Veni allows researchers who have recently obtained their PhD to conduct independent research and develop their ideas for a period of three years. The ideal candidate is at the start of his scientific career and displays
a striking talent for scientific research. There is a possibility of an extension in some cases. A researcher may apply for a Veni grant on a maximum of two occasions. A funding round is held every year. Be aware of the deadline.

All applications are assessed in a nationwide competition. The assessment criteria are: quality of the researcher, quality, innovative character and academic impact of the research proposal, and knowledge utilization. Each NWO division has a broad-based committee of scientists that in the first round ranks the proposals and then invites the most promising candidates for interview. A new and final ranking is made after the interviews and with input from (international) referees. On the basis of this ranking it is decided who will be granted a Veni. A separate committee will decide upon interdisciplinary applications.

Within the physics community, the Veni grants are mostly used in two ways. Firstly by foreign researchers who have come to the Netherlands as a postdoc, and who use a Veni grant to start building up their own research line either within the same group or elsewhere. Secondly by people who have obtained their PhD in the Netherlands, went abroad as a postdoc, and then use a Veni grant as a way to return to the Netherlands. In both cases the Veni often serves as a stepping stone towards a tenure track position.

5.2 Vidi

If you have already spent several years doing postdoctoral research and in order to develop your own innovative lines of research, you can apply for a Vidi. A Vidi is targeted at excellent researchers who, following their PhD, have carried out several years of research and in doing this have demonstrated the ability to generate and effect innovative ideas independently. Researchers who have obtained their PhD within the last eight years can apply for a Vidi grant. There is in some cases a possibility of an extension. A researcher may apply for a Vidi grant twice at most. A funding round is held every year.

All applications are assessed in a nationwide competition. The assessment criteria are: quality of the researcher, quality, innovative character and academic impact of the research proposal, and knowledge utilization.
utilization. Each NWO Division has a broad-based committee of scientists that in the first round ranks the proposals and then invites the most promising candidates for an interview. A new and final ranking is made after the interviews and with input from referees. On the basis of this ranking it is decided who is granted a Vidi. A separate committee will decide upon interdisciplinary applications.

5.3 Vici

The Vici rounds are somewhat different compared to from the Veni and Vici rounds, but as these are for researchers who have already been successful within the Dutch research community for a number of years, we do not describe them here.

5.4 Other funding possibilities (ERC)

Also the European Union and other organisations besides FOM offer funding possibilities. Especially the ERC grants are increasingly important talent programmes for our funding scheme. The ERC Starting Grants are probably most relevant for you. The ERC Starting Grants are aimed at researchers of all nationalities with two to seven years of experience since completion of their PhD, or an equivalent degree, and a scientific track record exhibiting great aptitude. A sole evaluation criterion is ‘scientific excellence of researcher and research proposal’. The research must be conducted in a public or private research organisation located in one of the EU Member States or Associated Countries. Funding per grant can amount up to M€ 1.5 (in some circumstances up to M€ 2. The duration is up to five years. The calls for ERC Starting Grants proposals are published once a year.
6. And finally: some general advice

Needless to say, all proposals and rebuttals to referee reports are in English, you should feel free to correspond with us in English, and interviews for the ‘Vernieuwingsimpuls’ positions are in English or Dutch, depending on the interviewee’s preference. So whether you speak Dutch or not is not important in any of our scientific evaluations. To put it differently: we are proud of the international and open character of our scientific community. Nevertheless, we do recommend that you do learn to speak Dutch quickly. You will discover that it will help your integration, both socially and at your home institute - you may find it will help you to get things done at the workshop or lab.

Moreover, we really want you to become a full member of our research community and to give input and share your ideas with us. You should realize however that science policy issues are still often discussed in Dutch, not the least because many of the science policy documents are shared with less international orientated organisations. Once you have grasped Dutch sufficiently well to participate in a discussion (even if you prefer to make your own arguments in English), you are likely to get involved more quickly in some of our advisory committees or juries, and this will in the end pay off also scientifically in terms of contacts and understanding the system, or in helping FOM set the future directions. After all, the Dutch research community is your research community now, and we hope that quite soon you will consider FOM yours as well!

Twice a year, a digital version of ‘FOM/News and backgrounds – announcements of the director’ is distributed among workgroup leaders. This document, which is in Dutch, contains a lot of useful information about budget developments, science policy, as well as about upcoming calls etc., and it is therefore a very useful document for you to get to know our system and to be alerted to research opportunities and programmes. Our advice is that you make sure you obtain the document from one of your senior colleagues. It might be a good idea to organise a lunch meeting with newcomers and one of the senior colleagues, to have
him/her explain the more important items. On the FOM website and in the quarterly magazine FOM expres you will find additional information about almost anything referring to the organisation.

Each year in January we organise the two-day conference Physics@FOM Veldhoven where 1850 physicists meet. Applying starts in October. We hope to see you in Veldhoven!
Being successful in applying

- The competition in applying for funds is great. Application procedures often vary. How to act in general in order to increase your chances in the competition for funding of a proposal?
- Ask the FOM programme officer or NWO-officer in charge for advice;
- A broad-based jury will judge your proposal. Therefore it should be easy to read, but at the same time contain enough details for referees. The first two pages are crucial and the content must be persuasive and inspiring;
- Start writing in time and ask some critical colleagues to review the concept; organise a grill session in which they get to the bottom of the proposal;
- Participate in a jury, so that you become familiar with the practice and get a feel of how a typical jury member looks at a proposal; get in touch with the responsible programme officer;
- Be aware of the deadlines;
- Make sure that you receive relevant emails, announcements and newsletters, like the ‘FOM/News and backgrounds – announcements of the director’, which is published twice a year and distributed via the ‘werkgroepleiders’ (not online, only in Dutch). Possibly organise a session with other newcomers and have a senior colleague go over some of the main items with you.

www.fom.nl
The programme officer at the FOM Office (‘programme coordinator’ or PC for short) is an important contact, for all questions regarding research, translation of information or the FOM organisation. Do not hesitate to call! If you are not sure who to contact just call the FOM Office and you will be put through to the correct person.