

NWO EVALUATION OF THE LORENTZ CENTER, LEIDEN 2014

Contents

1. Summary
2. The Lorentz Center
3. The review panel
4. Organization of the evaluation
5. Evaluation criteria, conclusions, recommendations
6. Assessment
7. Recommendations

Appendices

1. Review panel
2. Programme of the site visit
3. Participants in the discussions
4. Letter of the Board of Leiden University
5. Explanation of the scores as provided in the Standard Evaluation Protocol
6. From proposal to workshop at the Lorentz Center

1. Summary

The Lorentz Center organizes international workshops in the sciences and beyond. It promotes innovative research, at the scientific frontiers as well as on complex societal challenges. It fosters collaboration between research communities, reaching also outside academia. The workshops are characterized by ample time for active discussions and informal interactions.

The evaluation of the Lorentz Center, as requested by the Governing Board of NWO, was based on the Standard Evaluation Protocol 2009 – 2015 for research assessments in the Netherlands. However, as this protocol focuses on research groups, the scope and the criteria were adapted to suit the particular domain of the Lorentz Center. The NWO Physical Sciences Council was responsible for the evaluation.

Based on the self-evaluation report, a survey held under previous organizers of and participants in the activities of the Center and the open discussions during a site visit, the review panel installed by NWO has reached its conclusions, which are provided in this report. The committee hopes that its (few) recommendations will help strengthening the Lorentz Center even more.

Main conclusion

- We are very impressed by what has been achieved at the Lorentz Center. The Center has developed a unique concept, which is highly appreciated by the participants and which stimulates a multidisciplinary approach that is indispensable in this era of integration of sciences and scholarly disciplines.
- The Lorentz Center is a gem, a national treasure. For a small country, building and running such a center at such a high level is remarkable. With its multidisciplinary approach it thrives on interaction.

Scores

- | | | |
|-----------------------------|---|--|
| - Scientific quality | 5 | excellent. |
| - Organization & procedures | 5 | excellent (even exemplary) |
| - Viability | 5 | excellent - but there are important challenges |

Main recommendation

The committee strongly recommends all stakeholders to develop a joint action in order to realize adequate funding for the Center for the next years. However, the committee realizes that, despite the excellent track record to build on, it will require a lot of work and energy to continue the Lorentz Center in its present form and to realize the ambitions - ambitions that this committee wholeheartedly supports!

2. The Lorentz Center

Mission

The Lorentz Center, located at Leiden University, is an international center that coordinates and hosts workshops in the sciences, based on the philosophy that science thrives on interaction between creative researchers. The workshops may be monodisciplinary or interdisciplinary, including activities that bridge the sciences with the humanities or social sciences. Lorentz Center workshops focus on new collaborations and interactions between scientists from different countries and fields, and with varying seniority.

Concept

In order to allow both junior and senior researchers to catch up with the rapid international developments and to establish new contacts and collaboration, Lorentz Center workshops bring together junior and senior researchers in a stimulating environment with personal working space for all participants as well as normal meeting facilities. Two facilities are dedicated to workshops of different sizes: the Lorentz Center@Snellius for up to 25 participants and the Lorentz Center@Oort for up to 55 participants. Both venues are located within the science faculty at Leiden University. Through a combination of informal talks, working sessions, discussions, get-togethers, participants are able to assess the status of a field and its future, and to collaborate, establish new international contacts, and spot upcoming talent.

3. The review panel

Appointment

The NWO Physical Sciences Council, acting also on behalf of the Governing Board and other councils within NWO, has appointed a review panel composed of eminent scientists able to have a broad and multidisciplinary view on the activities of the Center. The composition of the panel is given in Appendix 1. As requested, the panel followed the Standard Evaluation Protocol for research assessment in the Netherlands, which includes a scoring of relevant criteria (see Appendix 5). The evaluation questions are based on the protocol but are adapted to the specific aims of the Lorentz Center.

Independence

All panel members have signed a declaration of non-involvement in advance. During the first closed session at the beginning of the site visit, the panel members each reported on any personal or professional relationships with the Center. The panel concluded that there were no unacceptable dependencies.

4. Organization of the evaluation

The basis for the evaluation was a site visit, which took place on 8 and 9 September 2014. The programme and the participants in the discussions are given in Appendices 2 and 3. The panel met with the Lorentz Center's management, and also with other stakeholders, including representatives of the funding organizations. The panel acknowledges the willingness of the stakeholders to participate in the discussions, which is in itself a healthy sign. The evaluation was supported by a self-evaluation report and a business plan by the Lorentz Center, which the panel received in advance. Furthermore, the committee received the results of a survey held under organizers and attendants of previous workshops.

The evaluation panel has addressed three criteria: scientific aspects, organization and procedures, and viability, following the NWO request.

5. Evaluation criteria, conclusions, recommendations

The committee has addressed each of the evaluation criteria provided in the Terms of Reference, based on its discussion of the written documents and the meetings that took place during the site visit.

1. Impact and quality of the activities

- The workshops are hugely appreciated by attendees and organizers, as testified by the organizers and participants who answered the survey or met with the committee.
- The quality of the workshops is excellent. Proof thereof, publications, obtained grants, strengthening the network etc. is somewhat anecdotal, but convincing.
- The impact within relevant research fields is reported to be very high.
- Citing the chair of the Lorentz Center Life Sciences Board: "The Lorentz Center brings the international scientific community into a small country."

Recommendation

- Ask participants to explicitly acknowledge the Lorentz Center in publications and to highlight examples of impact. This will make it easier to demonstrate impact.

2. The disciplinary basis (depth versus breadth)

- The Center has a strong basis in the science disciplines, as witnessed by the programme.
- Monodisciplinary workshops are and remain very important.
- The breadth of the activities is increasing; see 9.

3. Is the Center building bridges between disciplines?

- The Lorentz Center is multidisciplinary. Its programme contains both monodisciplinary and interdisciplinary workshops. The impression of the committee on the entire portfolio is very positive. This should further develop in the next years, working towards input in the development of the workshops from all involved disciplines.

Recommendation

- Success indicators would be helpful. E.g., a quantitative picture of degree and types of interdisciplinarity is now lacking.

4. Is the format of the workshops adequate to stimulate interaction between participants?

- Interaction is the core value of the Lorentz Center. This is the basic principle also guiding the future.
- The committee strongly appreciates the interactive and effective way in which staff, advisory boards and organizers work together in shaping the format of the workshops.
- Feedback of the participants confirms the high value of the format and ample time for interaction.
- All these aspects make the Lorentz Center unique.

5. Are the target groups appropriate, well served and balanced?

- The Center tries to encourage diversity in terms of juniority/seniority, but also in terms of gender.
- Workshops are also organized by junior researchers, which is very positive. A good mix of junior and senior scientists is guaranteed.
- The scientific manager encourages workshop organizers to invite women and to involve female co-organizers, the Advisory Boards suggest names.
- The Lorentz Center provides excellent facilities, including babysitters.
- The Advisory Boards contain relatively many women in comparison to the proportion of women in the field.

6. Is the review procedure adequate?

- The iterative application procedure is effective. It provides an improvement-oriented interaction and way of working.
- Advisory Boards
 - They are monodisciplinary, except for Computational Science and for NIAS-Lorentz.
 - They vary in size and procedures, depending on the preferences of the chairs and the workload.
 - Members are ambassadors, may propose topics, solicit and review proposals.
 - Chairs have a strong coordinating role; they meet with LC management.
 - Members come mostly from the Netherlands, the chairs are not from Leiden.

Recommendations

- Consider the option to have fewer and multidisciplinary boards.
 - Especially when the Lorentz Center expands its coverage, such a change may have advantages.
 - It gives a more direct grip on interdisciplinarity through direct debate within a multidisciplinary board.
 - All scientific aspects of proposal will be discussed by a broader group of strong mono- and multidisciplinary experts.
 - The chairs should keep their coordinating role and the Lorentz Center keeps control.

But: The present setup works well at the current level of operations and has strong support from the board members, despite the required effort!

- Increase the international membership of the Advisory Boards. This may strengthen the ambassadors' role internationally and stronger support for the Lorentz Center.

7. Are strategy and policy adequate in response to scientific, scholarly, societal and political developments?

- The monodisciplinary workshops are very strong and fully at the forefront of fundamental problems in science.
- The interdisciplinary workshops are in line with demand and developments in science and society. This holds especially for the "industry and mathematics/physics/life sciences/ICT" format. Industry can indeed profit from these workshops, which provide relevant outcomes.

8. Viability regarding future developments

- The sciences and scholarly disciplines are changing rapidly due to the blurring boundaries between disciplines, e.g., the way mathematics and computer science interact with the humanities. This needs a bottom-up approach stimulating input from both sides, which perfectly fits the mission of the Lorentz Center.
- The Lorentz Center has a strong and distinctive vision regarding the ongoing integration of the sciences and is well positioned to broaden its scope in response; see 9.

9. Is the scope of the activities adequate?

- The Lorentz Center has a strong basis in the sciences and their relation to other disciplines.
- The ambition is to expand further into chemistry and medical sciences. The recently established Chemistry Advisory Board is convinced that the Lorentz Center format will attract the interest of more chemists. The visibility in this domain will grow.
- Still underrepresented areas are technology and engineering, earth sciences, social sciences and humanities (SSH).
 - There is a unique opportunity: the mutual impact between sciences and SSH:
 - In one direction there is the increasing ubiquity of modelling and computing in all of the sciences and scholarly disciplines, while in the other direction there is the increasing embeddedness of SSH in science and technology.But there is an associated threat: the perceived lack of visibility of SSH at the Center.
- The University has taken a new initiative, to set up a third venue for SSH. This is a unique opportunity. The panel sees a need for such an expansion and strongly supports the initiative. It would require shared funding between Leiden University, the Ministry of Education, Culture and Science, and NWO. Such an ambitious plan can only be achieved with the help of all parties.

Recommendation

- Integrate the SSH-initiative in the Lorentz Center.
 - Move with caution! Steps might be:
 - involving an international advisory committee in the setup;
 - appointing a co-director, to strengthen the basis of the Lorentz Center in SSH.
 - Take into account the challenges, in particular:
 - managing conflicting interests of different cultures;
 - funding.
 - Build on the *uniqueness* of the Lorentz Center:
 - integration of all of the sciences and scholarly disciplines;
 - interaction;
 - open format;
 - streamlined organization.

10. Societal relevance of the activities

- The Lorentz Center is successful in promoting contacts between academia, industry, education, society at large.
- The study groups mathematics/physics/life sciences/ICT with industry have the potential to deliver relevant outcomes for industry.
- For instance, the NL-e-SC is interested in advice on the scientific directions to which they should respond.

Recommendation

- Foster public-private cooperation, increasing co-funding.

11. Are the operational procedures professional?

- Yes, they are extremely well thought out and streamlined. They clearly contribute to the success formula of the Lorentz Center.

12. Is the staff adequate in quality and size?

- The staff of the Lorentz Center is one of its key strengths. They have a clear vision on the activities and strongly contribute to achieving the setup and organization of the workshop, that is the key to the success.
- It is professional. Citing the Chair of the NIAS-Lorentz board: "It has the right style and an improvement-oriented attitude."
- It is lean.

13. Are the facilities adequate?

- The facilities are very good, both at Oort and Snellius. They provide a stimulating environment and are designed for interaction among participants.

14. Viability as international workshop center

- The Lorentz Center scope and format are exemplary. Some initiatives are now being taken in other countries to copy these, which is a serious compliment.

15. Are the activities in balance with the funding?

- The committee has no doubt that the Center provides good value for money. Adequate funding of the workshops provides the freedom to the organizers to focus on quality.

But there is an additional question:

16. Is the funding adequate, now and in mid-term?

- The present funding by Leiden University and NWO has been visionary and has delivered value for money.
- The additional one-time funding of the Ministry of Education, Culture and Science has enabled both the expansion of the scientific spectrum of the Center, as well as the increase in the number of workshops it organizes per year – including establishing the second workshop venue. The follow-up of this investment by NWO – its divisions and its Governing Board – over the past five years has secured the growth of the Center to its present capacity of 65 workshops a year.
- The funding vulnerability of the Lorentz Center is part of its ambition to cover all of the sciences; the security of monodisciplinary centers lies in their confinement.
- There is now new funding required for 2016-2021. The business plan 2016-2021 provides three scenarios, that allow an increasing level of activities:
 - Scenario A (65 workshops) is the continuation of the level of activity that the center has reached now, but it will be a challenge. It comprises a moderate

- expansion of the scientific remit towards the chemical and medical sciences and a modest increase of the costs.
- Scenario B (90 workshops) means the optimum use of both facilities, but this is ambitious. This will allow consolidation of the activities over the full scientific spectrum and an optimum use of the capacity of both venues.
- Scenario C (3 venues) means an expansion of the programme beyond the sciences to include the social sciences and humanities without an explicit science component. It would in future require a third venue and is a long-term issue.
- Each scenario requires an increased budget:
 - The university has provided a letter of support (see Appendix 4) and indicated that the Lorentz Center is a priority; it should be willing to contribute its share, 40%.
 - The national importance of the Lorentz Center justifies a matching of the 40% university contribution from sources at a national level, provided by the NWO Governing Board and its councils. Representatives of the funding organizations, in their meeting with the panel, showed a generally positive attitude. NWO should aim to match the 40% university contribution in view of the national importance of the Center.
 - The Lorentz Center has shown that it can raise a 20% contribution from other sources. It already raises a substantial income from contributions to specific workshops. Such other sources of funding and partnerships include:
 - o special programs: KNAW, Lorentzfonds, CECAM, NLeSC, ...;
 - o industry workshops: study groups, Océ, ASML, ...;
 - o workshop organizers and their universities and funding agencies.
 - The Ministry of Education, Culture and Science has been pivotal in initiating the expansion of the Center within the sciences. A similar impulse is now essential to bring the Center to a truly unique status covering all scientific and scholarly disciplines that will enable it to play an essential role in the integration of the scientific and scholarly disciplines, which is key to the role of research in the future.
- The Lorentz Center is gaining international fame. This may open the opportunity to gain international (European) support. One must however remain conscious of the big effort that will be needed to explore such options.
- With such a strong brand in hand one should consider obtaining private funding, such as donations. This requires an investment in time and focus. In Europe this is no part of the funding culture yet, although more and more organizations aim to attract donations. It has an element of chance, but with a strong effort the Lorentz Center should have good chances.

6. Assessment

Main conclusion

- We are very impressed by what has been achieved at the Lorentz Center. The Center has developed a unique concept which is highly appreciated by the participants and which stimulates a multidisciplinary approach that is indispensable in this era of integration of sciences and scholarly disciplines.
- The Lorentz Center is a gem, a national treasure. For a small country, building and running such a center at such a high level is remarkable. With its multidisciplinary approach it thrives on interaction.

Scores

- Scientific quality	5	excellent.
- Organization & procedures	5	excellent (even exemplary)
- Viability	5	excellent - but there are important challenges

7. Recommendations

➤ *Leiden University:*

The review panel congratulates the University. It is very impressed by their commitment and their vision regarding the Lorentz Center. It recommends that they realize their plans for SSH expansion.

➤ *Netherlands organization for Scientific Research (NWO):*

The panel strongly urges NWO to continue matching the funding provided by the University. In the event of Scenario C, we recommend substantial contributions by the NWO Social Sciences & Humanities Divisions.

➤ *Lorentz Center:*

The panel is very impressed by what has been achieved at the Lorentz Center. It recommends the Lorentz Center to develop a fundraising policy and procedures for the near future. This is going to require a lot of effort.

Appendix 1

The review panel

Composition

The panel was appointed by the Physical Sciences Council as coordinator of the review on behalf of NWO. The composition was as follows:

- Prof. Jan Karel Lenstra, Networks and Optimization, Amsterdam, chair
- Prof. Paul Durham, Computational Science and Engineering, Daresbury
- Prof. Poul Holm, Marine Environmental History, Dublin
- Prof. Sabine Otten, Intergroup Relations and Social Integration, Groningen
- Prof. Pierre Ramond, High Energy Theory, Gainesville
- Prof. Marcel Visser, Animal Ecology, Wageningen
- Dr. Nico Kos, NWO, The Hague, academic secretary

Curricula vitae

Jan Karel Lenstra

Jan Karel Lenstra is former director of the Centrum Wiskunde en Informatica (CWI) – an NWO institute – and former dean of the Faculty of Mathematics and Computer Science at the TU Eindhoven. He held professor positions in discrete optimization at the University of Tilburg, Erasmus University and the Georgia Institute of Technology. He is presently CWI Fellow and professor emeritus at TU Eindhoven. Jan Karel has been chair of committees of the Royal Dutch Academy of Arts and Sciences (KNAW) on mathematics in primary education and on informatics in secondary education. He is co-organizer of a workshop at the Lorentz Center on the latter topic, which will take place in September 2014.

Paul Durham (Daresbury Laboratory, UK)

Paul J. Durham is affiliated with the Scientific Computing Department at the Daresbury Laboratory of the Science and Technology Research Council (STFC), a department that 'provides world-class expertise and support for the UK theoretical and computational science communities, in both academia and industry. Research areas range from accelerator physics to material sciences and bio-medical engineering. Paul was President of the Council of CECAM (Centre Européen de Calcul Atomique et Moléculaire (EPFL, Switzerland)). Paul has no former involvement with the Lorentz Center; however, he recently joined the director of CECAM for a brief visit to the Lorentz Center.

Poul Holm (Trinity College, Dublin, Ireland)

Poul Holm is Professor of Environmental History at Trinity College Dublin and president of the European Consortium of Humanities Institutes and Centres. His research focuses on the history of marine animal populations, aiming to understand human benefits from and impact on ocean life. Poul has served on various national and European committees, such as the Danish Research Council for the Humanities. He has no former involvement with the Lorentz Center.

Sabine Otten (Rijksuniversiteit Groningen, Netherlands)

Sabine Otten is Professor for Intergroup Relations and Social Integration at the University of Groningen. Throughout her career, she has been especially interested in social identification, ingroup favoritism and intergroup discrimination, and in the role of categorization in intergroup conflict. Recently, she has done work on social integration and diversity, thereby aiming at identifying the boundary conditions for successful and reliable inclusion of cultural majority and minority members at work. She has no former involvement with the Lorentz Center, except having been participant in a workshop.

Pierre Ramond (University of Florida, USA)

Pierre Ramond became Professor of Physics at the University of Florida in 1980, where he

promoted to his present title of Distinguished Professor in 1999. Ramond pioneered the development of superstring theory which laid the ground for supersymmetry. Ramond has received several awards for his contributions to theoretical physics and is former President of the Aspen Center for Physics. He has no former involvement with the Lorentz Center.

Marcel Visser (Netherlands Institute of Ecology (NIOO-KNAW))

Marcel E. Visser is Head of the Department Animal Ecology of the Netherlands Institute for Ecology NIOO-KNAW, Professor of Seasonal Timing of Behaviour at the University of Groningen and Professor of Ecological Genetics at Wageningen University. His main research interests are the causes of variation in seasonal timing of growth and reproduction and the consequences of this for fitness and population processes. Marcel received a NWO VICI grant in 2007 and an ERC Advanced grant in 2014. He has co-organized two workshops at the Lorentz Center.

Nico Kos (NWO, The Hague)

Nico Kos obtained his Ph.D. in Chemistry at Wageningen University. After a short postdoc period there he worked at the policy department of this University and later of the Technical University Delft. Since 1986 he works at the Netherlands Organisation for Scientific Research (NWO), where he had several positions in the domain of the Physical Sciences. He is presently senior manager (international) programme innovation at the Chemical and Physical Sciences Division.

Appendix 2



Programme

Site visit Review panel Lorentz Center

Lorentz Center @ Snellius, Niels Bohrweg 1, room 278, Leiden
8 and 9 September 2014

Day 1

14.00	Arrival at the Center
14.00 – 14.30	Installation by Prof. Ewine van Dishoeck on behalf of NWO
14.30 – 15.15	Closed session (introductions, working process)
15.15 – 15.30	Break
15.30 – 16.30	Meeting with management and staff
16.30 – 17.00	Tour of the facility by the management Wine and cheese party with workshop participants
18.15 – 21.00	Dinner at la Cloche, Kloksteeg

Monday 8 September

Day 2

09.00	Arrival at the Center
09.00 – 10.00	Meeting with participants of previous workshops
10.00 – 11.00	Meeting with the chairs of the advisory committees
11.00 – 11.30	Break
11.15 – 12.00	Meeting with the Dean of the faculty
12.15 – 13.15	Lunch meeting with a delegation of the funding councils
13.15 – 13:45	Break
13:45 – 16.15	Closed session, report writing
16.15 – 17.00	Presentation of first impressions to the management
17.00	Departure

Tuesday 9 September

Appendix 3

Participants in the discussions

Workshop organizers and participants
9 September 2014, 09:00 - 10:00h

Prof. dr. H.J. (Henkjan) Honing	Universiteit van Amsterdam
Dr. D.M. (David) Baneke	Sterrenwacht Leiden
Dr. W. (Wouter) H. Roos	Vrije Universiteit
Heer B. (Bart) van Veldhuizen	Tata Steel
Prof. dr. R. (Roeland) Merks	CWI
Prof. dr. F. (Frieder) Mugele	Universiteit Twente

Chairs of the Lorentz Center Advisory Boards
9 September 2014, 10:00 - 11:00h

Dr. H. (Henk) Hoekstra	Astronomy
Prof. dr. M.T.M. (Marc) Koper	Computational Science
Prof. dr. J.B.T.M. (Jos) Roerdink	Informatics
Prof.dr. M.C.M. (Mathisca) de Gunst	Mathematics
Prof. dr. M. (Martha) Merrow	Life Sciences
Prof.dr. A.J.H. (Tony) Donn�e	Physics
Dr. S.J. (Sijbolt) Noorda	NIAS-Lorentz
Prof. dr. F.P.J.T. (Floris) Rutjes	Chemistry

Faculty of Science, Leiden University
9 September 2014, 11:15 - 12:00h

Prof. dr. G. (Geert) de Snoo
Prof. dr. J.H. (Han) de Winde
Prof. dr. E.R. (Eric) Eliel

Representatives of the funding councils
9 September 2014, 12:15 – 13:15h

Prof. Dr. E.F. (Ewine) van Dishoeck	EW
Prof. Dr. Ir. W. (Wilco) Hazeleger	NLeSC
Dr. J. (Judith) de Kroon	WOTRO
Prof. Dr. B.G.M. (Beate) Volker	MAGW
Drs. H.G. (Hendrik) van Vuren	FOM
Dr. B.G. (Erik) Kreiter	FOM



Universiteit
Leiden

College van Bestuur

Gebiedsbestuur NWO Exacte Wetenschappen
Postbus 93460
2509 AL Den Haag

Universiteit Leiden
Rapenburg 70
Postbus 9500
2300 RA Leiden

Nummer 2014/22029 AZ
Uw brief van
Onderwerp Evaluatie Lorentz Center

Datum 2 juni 2014
Doorkiesnr. 071-5277565
Contactpersoon Floor Frederiks

Geacht Bestuur,

In september 2014 zal een internationale visitatiecommissie het Lorentz Center bezoeken. Dit bezoek vindt plaats in het kader van de evaluatie van de activiteiten van het centrum in de periode 2008-2013, mede met het oog op de financiering van het centrum voor de komende jaren.

Met deze brief willen wij graag onze steun voor het Lorentz Center laten blijken. Het centrum heeft zich een unieke positie in Nederland, in Europa en zelfs wereldwijd verworven, die de Nederlandse wetenschappelijke gemeenschap zeer ten goede komt. Het werk van de staf van het centrum draagt in belangrijke mate bij aan de sfeer en het gemeenschapsgevoel die zo geroemd worden door de deelnemers aan de workshops. Wij zijn dan ook trots het Lorentz Center te mogen huisvesten binnen onze universiteit en hebben het volste vertrouwen in een positieve uitkomst van de evaluatie.

Met hartelijke groet,

het College van Bestuur,

Prof. mr. C.J.J.M. Stolker,
Rector Magnificus & Voorzitter

C.c.: Algemeen Bestuur NWO

Datum	10-6-2014		
Doss.nr.	100.060.100.21		
Ref.nr.	2014/06/165/AV		
Beh.	Par.	cc	cc
LOS	6 ADV		
GBE	1 ADV		
			AVB

Appendix 5

Explanation of the scores as provided in the Standard Evaluation Protocol

Five point scale

The review panel will report its findings after reviewing the three vital functions of an institute, i.e. the producing results for the academic community, producing results that are relevant for society, and educating and training the next generation of researchers, in terms of the four main criteria. Regarding the institute level it should focus on policy and management questions. The verdict is given in qualitative form, though a quantitative figure may be added according to the scale here under. The board, which is responsible for the evaluation, should make this clear beforehand in the Terms of Reference. For the assessment of the groups or programmes, the verdict should be cast in both qualitative and quantitative terms. In the text, the most important considerations of the committee should be clarified, while the conclusion should be summarized in a single term according to a five point scale, 'excellent' meaning world class research, and 'unsatisfactory' meaning below acceptable standards. The committee is requested to consider the full range of the five point scale and apply the criteria according to the descriptions given.

For disciplines that operate primarily in a national context, such as Dutch language, or Dutch law, the relevance of international competitiveness is transferred to relevance on a national level. For these disciplines, research should receive the qualification 'excellent' when it is regarded the top group in the country.

5. Excellent

Research is world leading. Researchers are working at the forefront of their field internationally and their research has an important and substantial impact in the field.

4. Very good

Research is internationally competitive and makes a significant contribution to the field. Research is considered nationally leading.

3. Good

Work is competitive at the national level and makes a valuable contribution in the international field. Research is considered internationally visible.

2. Satisfactory

Work adds to our understanding and is solid, but not exciting. Research is nationally visible.

1. Unsatisfactory

Work is neither solid nor exciting, flawed in the scientific and or technical approach, repetitions of other work, etc.

Appendix 6

From proposal to workshop at the Lorentz Center

Preparing a workshop proposal

Submission of a proposal for a workshop is open to any individual or group of scientists from any country. The Lorentz Center strongly recommends consulting the science manager with a draft proposal or a preliminary idea at an early stage. With this interaction the proposal is prepared for submission and the chance of a successful application is enhanced.

The workshop proposal evaluation

After submission, the workshop proposals are presented to the scientific advisory boards for evaluation. The evaluation includes scientific quality, the advantages of the facilities offered by the Lorentz Center, limited lectures and plenty of room for discussion, and impact and interest from the Dutch scientific community. Multidisciplinary proposals are evaluated by more than one board. When necessary, external referees are consulted.

The scientific advisory boards advise and guide the scientific program. The members of the boards are scientists from a broad selection of (mostly) Dutch universities. The term for board members is 4-5 years. The task of the boards is four fold: Scientific evaluation of submitted proposals, a breeding ground for ideas for new topics, advice on the development of the Center, and providing personal contacts to a wide range of research fields and institutions.

Currently eight scientific advisory boards are active:

- Computational Sciences
- Astronomy
- Informatics
- Life Sciences
- Mathematics
- Physics
- NIAS-Lorentz (in collaboration with the Netherlands Institute for Advanced Study)
- Chemistry

Admission of a workshop includes a financial commitment from the Lorentz Center. Workshop proposals are submitted for evaluation three times per year: 15 January, 15 May and 15 September. In each evaluation round, proposals for workshops taking place within 16 months after the deadline will be evaluated.

Information on the outline of a Lorentz Center workshop proposal can be found at <http://www.lorentzcenter.nl/propoort.php>