18.04.09

Evaluation of the objectives, activities, and future prospects of NORDITA

Report of the Evaluation Committee

The Evaluation Committee was composed of the following three members:

- Prof. John Ellis, Theoretical Physics Division, CERN, Switzerland
- Prof. Wick Haxton, Institute for Nuclear Theory, University of Washington, Seattle, USA
- Prof. Gaute T. Einevoll (scientific secretary), Department of Mathematical Sciences and Technology, Norwegian University of Life Sciences, Ås

The terms of reference for the evaluation were described in a letter from NordForsk on February 19th 2009.

The Committee received written background material from Nordforsk and NORDITA including:

1. the contract between the Nordic Council of Ministers and KTH and SU concerning NORDITA for the period 31.12.2006-31.12.2009,
2. the document "Revised establishment plan for NORDITA 2007-2014",
3. the document "NORDITA – 2008 and beyond",
4. the document "NORDITA: the next ten years",
5. the document "Director's report (2008-10-03)", and
6. the self-evaluation document "NORDITA in Stockholm" dated March 24th 2009.

The Committee visited NORDITA in Stockholm on April 2nd and 3rd 2009. During the site visit the Committee met with the NORDITA director and co-director, faculty, board and fellows. The Committee also met with representatives of the two host universities as well as representatives from the Nordic theoretical physics community. The schedule for the NORDITA visit is appended to this report.

The Committee is unanimous in its findings and recommendations.

1. Executive Summary

NORDITA has a long and distinguished record as a Nordic centre of research excellence whose importance is recognized at the European and world levels. The recent move to Stockholm has provided an opportunity to renew NORDITA with a view to a healthy long-term future. This opportunity has been seized successfully: NORDITA has re-invented itself in its new environment, to the advantage of the Nordic research communities in theoretical physics and related fields. The in-house research programs are of the highest quality and attract considerable external funding. Despite practical difficulties associated with the move

to Stockholm, older faculty members appointed before the move maintain active relations with younger researchers at the new location.

There are exciting opportunities to expand NORDITA's research activities into new fields. NORDITA is expanding its programs, workshops, symposia and visitor activities to the general benefit of the Nordic community, and is planning to introduce new programs of lecture courses for graduate students that will supplement those made available locally in Nordic universities and provide valuable new educational opportunities for their students. SU and KTH have played excellent roles as the new hosts of NORDITA, providing invaluable financial, logistical and administrative assistance. The deans of SU and KTH are very happy with the arrival of NORDITA, which has provided clear benefits to their own research teams. There are opportunities to expand NORDITA's relationships with other educational institutions in the region, to the long-term benefit of the Nordic community.

Relations between the Board and the Director are very good. The current Director of NORDITA has played a very successful role in leading it in the period following its move to Stockholm, a role that is universally appreciated. The Deputy Director has also played an essential role in liaison with the host universities and the AlbaNova campus. NORDITA has acquired an enviable reputation for the friendly way in which it assists new arrivals to Stockholm, thanks to the devotion of its administrative staff. The planned expansion of this staff is most welcome, and should make possible improved support for newcomers before their arrival as well as the follow-up of alumni. The success of NORDITA since its move to Stockholm fully merits the stabilization and expansion of its funding. An increase of the NORDITA budget would enable NORDITA to broaden its scientific activities, finance a Nordic graduate school, expand its various programs and visitor activities, and upgrade its efforts in computational physics.

2. Status of Scientific and Organizational Progress

A central question in this evaluation is the success of the move from Copenhagen to Stockholm, at the beginning of 2007. Despite a long list of challenges in uprooting and moving a major scientific institution, the transition appears to have gone very well. NORDITA is currently functioning at a high level, with strong visitor programs, a vigorous local research program, good support from local universities, and perhaps most importantly, strong leadership from the Director and his Board. It continues to enjoy strong support from the Nordic countries that it serves, and remains one of the most visible international centers in theoretical physics.

One of the more complicated issues in the transition was the status of the senior faculty: three of these (John Hertz, Paolo DiVecchia, and Chris Pethick) did not make the move due to a combination of family- and pension-related issues. John and Paolo have nevertheless managed to refocus their scientific lives on Stockholm. John remarked on the positive spirit behind the transition. Hertz now spends about 25% of his time at Stockholm, where he has established new collaborations in neuroscience. Paolo’s experience has been very similar. Chris Pethick was not able to make the move for family-related reasons, but also remarked on the smooth transition and on the efforts made to provide him with adequate support. Chris and Paolo are quite close to retirement.

Much of the credit for the success of the transition is due to the strong leadership of Director Larus Thorlacius and Deputy Director Ulf Wahlgren. Their hard work and optimism have contributed to the good feelings that were widely expressed about the transition. The Institute's day-to-day operations have reached a high level, including a vigorous local research effort involving many strong younger researchers and well-managed programs and workshops that are serving both the Nordic community and many international visitors. The summary opinion of almost everyone involved in the transition is that it has progressed much better than was expected.

The legal and operational framework in Stockholm also appears to be a great success. The two host universities have provided excellent support while taking care not to intrude on NORDITA's independence. In our view their positive stance toward NORDITA is precisely that needed to ensure the Institute's success as an independent Nordic enterprise.

2.1 Backbone research activities

2.1.1 High-energy and nuclear physics

The research in field theory, string theory and quantum gravity is of very high quality, and we note with approval the plans to develop connections with LHC physics. We think that NORDITA could play a valuable role in developing and enhancing Nordic research in extensions of the Standard Model of particle physics and their phenomenological tests. It will be important during the LHC era to involve in NORDITA activities all Nordic groups working in different aspects of particle physics.

2.1.2 Astrophysics

The astrophysics program is anchored by Axel Brandenburg's very strong program in astrophysical fluid dynamics, particularly the problem of magnetic field generation from turbulent motion in the Sun's convective envelope, accretion disks, galaxies, and the early universe. His work has led to a deeper understanding of magnetic field activity in the Sun, including the mechanisms responsible for the concentration of magnetic flux at the Sun's surface. Axel has helped develop the Pencil Code, a flexible 3D code for astrophysical fluid dynamics that has been successfully run on a 7000-processor machine. Axel maintains Pencil as a public domain code. There is also a smaller effort in the interdisciplinary field of astrobiology.

One measure of the stature of this program is the recent award of a European Research Council (ERC) Advanced Investigator Grant for the project AstroDyn for continuing the work on astrophysical dynamos. This award will support four PhD students, four postdocs, one assistant professor, and various senior visitors to NORDITA.

2.1.3 Condensed matter, statistical physics and biophysics

Also the research in condensed matter, statistical physics and biophysics is of very high quality. At present three young, highly-skilled and active assistant professors (Eddy Ardonne, Ralf Eichorn, Jani-Petri Martikainen) add to the existing activities of the permanent faculty (John Hertz, Chris Pethick). Together the professors cover a wide range of interesting and timely topics in the field, for example, strongly correlated electron systems, ultra-cold gases, transport processes in biological systems, and neuroscience.

2.1.4 Opportunities in research themes: Areas of Possible Expansion
Here we describe several developing subfields of physics that would be good choices for expansion of NORDITA's backbone research activities, if an opportunity arises:

- Construction of the Large Hadron Collider (LHC) at CERN has now been completed, and it is being readied for operations in the near future. The LHC will explore the structure of matter at energies an order of magnitude higher and distances an order of magnitude smaller than any previous particle collider. It should provide experimental answers to many theoretical questions beyond the Standard Model of particle physics such as the origin of particle masses, and perhaps new insights into cosmological puzzles such as the nature of dark matter.

  The advent of the LHC poses new challenges to theoretical physics, including the formulation of new theories of particle physics, the exploration of their possible phenomenological tests and, in time, the interpretation of new experimental data. NORDITA has the opportunity to provide leadership and a focus for Nordic theoretical physicists confronting these challenges, by recruiting new faculty, postdocs and students working on LHC physics.

- String theory offers a uniquely powerful toolkit suitable for tackling many problems in theoretical physics that lie beyond the reach of conventional field theory. In particular, the connection between gauge theories and gravity theories offered by the AdS/CFT correspondence provides a new tool for studying strong-coupling problems in condensed-matter physics. NORDITA faculty members have already taken a lead in exploring this new scientific opportunity, which could be followed up by recruiting postdocs and students to work in this area.

- Particle astrophysics and cosmology is a rapidly growing area at the interface of subatomic physics and astronomy/astrophysics. An appointment in this field would build bridges between the existing efforts in particle theory and astrophysics, as well as to the Oscar Klein Institute on the Albanova campus. Research in this field includes some of the most intriguing questions in modern physics – the nature of dark energy and dark matter, the mechanism behind inflation, the high-energy limits of the universe, and the range of validity of general relativity. The field is a likely one for major discoveries because of the rapid advance of observation and experiments. It is also an area that draws many of the best students and is of interest to the general public.

- Data-driven numerical modeling is an emerging area where an understanding of complex physical phenomena can be obtained through high performance computing. With the world's faster computers expected to increase in power by another factor of 1000 by the early 2020s, this field will increasingly require physicists to partner with applied mathematicians and computer scientists in the design and implementation of algorithms. The opportunities include data mining in the identification of transient phenomena in astrophysics; materials design; and a variety of challenges involving science and society, including climate and energy.

- Neuroscience is among the biological subfields where the methods from theoretical physics have been most widely applied. At present John Hertz is very active in this field

of computational neuroscience and has already established good scientific links with scientists at SU, KTH and to the medical university Karolinska Institutet. Its new location close to the world-reknowned Karolinska Institutet, in particular, offers NORDITA an excellent scientific environment for the development of biophysics in general, and computational neuroscience in particular. When Hertz retires in 2013, a new recruitment in this field, possibly a fourth permanent faculty position, should be considered.

2.2 Career development

One of the critical roles of NORDITA, both as a Nordic center and as a prominent international theory institute, is in helping young people advance in theoretical physics. The tasks include attracting and training new graduate students and helping postdoctoral researchers become established as independent researchers. NORDITA, as a "showcase" international institute, can also help the Nordic countries in their efforts to recruit and retain exceptionally talented young researchers who have reached the assistant professor level.

2.2.1 Assistant professors

The assistant professor positions at NORDITA are faculty-level positions, but with a fixed term of five years. The current assistant professors are Eddy Ardonne (condensed matter), Ralf Eichhorn (statistical physics), Stefan Hofmann (cosmology, currently on leave), and Jani-Petri Martikainen (cold atomic gases). Two additional appointments will likely be made for Fall 2009, with the expectation that five assistant professors would then be in residence next year.

Despite their fixed term, these positions are quite attractive, providing young researchers an opportunity to do concentrated research while awaiting a tenured or tenure-track opening elsewhere. The assistant professors greatly strengthen NORDITA's research program, beyond what would be possible with the senior faculty alone. Our committee had the opportunity to meet with one of the assistant professors in person (Martikainen) and two by phone (Ardonne and Eichhorn). These discussions were very encouraging. Martikainen had established collaborations with two postdocs interested in quantum gases, and had been successful in obtaining outside grant support. Ardonne remarked on the important role the assistant professors were encouraged to play in the hiring of fellows and in the selection of programs. Eichhorn, who very recently joined NORDITA, described his family's very positive experience with relocating to Stockholm. All were very positive about NORDITA's scientific environment and optimistic that their decisions to join the Institute were wise career moves.

2.2.2 Postdocs

NORDITA supports a very vigorous, broad postdoctoral program, with a total of ten researchers at this time. Two new postdocs will arrive in August to participate in the AstroDyn project. Thus one strong aspect of the postdoctoral program is its size, sufficient to produce a "critical mass" of young researchers who can interact with one another – though these interactions are limited by the physical separation caused by housing the group in two buildings. The research fields of the postdocs include astrophysics and cosmology, astrobiology, condensed matter theory, the atomic physics of cold Fermi gases, high-energy physics, and biological physics. The environment is an excellent one for young researchers due to NORDITA's workshops and programs, which bring many visitors to the Institute.

2.2.3 PhD and MSc Students
The committee had an opportunity to meet several students during its session with postdocs and students. We strongly support efforts by NORDITA faculty and the host universities to involve students in the NORDITA research program – and, as noted in Section 3.5, we also support creative programs for involving students from a wider array of Nordic universities. Brandenburg's program is an excellent model, providing research positions for 3-4 students. We also met one visiting student who was participating in NORDITA research through a short-term internship.

3. Nordic purpose and benefits

According to NORDITA's 'Goal and performance contract', a central purpose of NORDITA is to strengthen Nordic theoretical physics and promote collaboration between the Nordic physics communities. A central element of this is the postdoctoral fellowship program and, to a lesser extent, also support of PhD and MSc programs in theoretical physics. These points are described in the above Section 2.2.

In addition NORDITA is also expected to act as a Nordic hub for theoretical physics serving the entire Nordic community. A host of activities are being run to fulfill this mission, including *scientific programs, Nordic networks, workshops and symposia,* and *a visiting scientist program.* We find all these activities to be essential for achieving the desired 'Nordic purpose and benefits', and we find, moreover, that the new NORDITA in Stockholm runs these activities vigorously and successfully.

Each of the four activities will be described in detail below, but first we would like to make a general comment on the balance between Nordic and non-Nordic participants in these activities. Without investigating the statistics in detail, we got the impression that the participants were typically divided roughly equally between these categories. We find this to be an appropriate balance between the needs to assure that Nordic theoretical physics gets the necessary influx of ideas and connections from the international physics community, while, on the other hand, there are Nordic physicists present to benefit from this input.

3.1 Scientific programs

Since 2007 NORDITA in Stockholm has run a number of *scientific programs* where a group of 10-30 scientists come together to work on a specific area of research for an extended period of 2-6 weeks. Seven such programs were arranged in 2008, eight are planned for 2009, and an increase to ten programs per year is planned.

We find the scientific programs to be most valuable from the perspective of Nordic 'benefit' as they allow for Nordic scientists to spend an extended time at NORDITA working with a diverse group of scientists in a stimulating atmosphere away from their day-to-day duties at their home institutions. We are further impressed by the wide range of topics that are addressed by the programs which demonstrates that NORDITA indeed lives up to its promise to work on theoretical physics 'in a broad sense'.

We were informed that about 50% of the applications to arrange scientific programs were approved by the NORDITA board. We feel that this is about the right success rate, and, while we in general support the idea of increasing the number of programs to ten per year, we think this should presuppose a larger number of applications so that this success rate can be maintained.

We further think that a good distribution of organizers for each program would be to have one person from the local environment, one from the Nordic community, and one from outside the Nordic countries. The board informed us that they were actively encouraging program applicants lacking a Nordic component to resolve this problem and resubmit their proposal. We find this proactive attitude very positive.

We note that several other institutions around the world also have programs analogous to that developed by NORDITA including, for example, the Perimeter Institute in Canada, the ICTP in Trieste and the Galileo Institute in Florence. It may be useful for NORDITA to compare notes with these other institutions, share experiences and adopt best practices. For example, both the ICTP and the Perimeter Institute make extensive use of videoconferencing technologies for disseminating lectures off-site, which may be an interesting option for the Nordic community.

3.2 Nordic networks

The goal of *Nordic networks* is to coordinate research efforts in particular research areas within the Nordic region. Such Nordic network activities may, for example, involve a series of workshops or programs in a certain area. The NORDITA professor Paolo DiVecchia has successfully organized such a network in string and gauge theory (a subfield of subatomic physics) since 1994, and this network has been very important to the Nordic string-theory community.

With the new location of NORDITA in Stockholm, we think the establishment of more Nordic networks could be a way to establish new links with the Nordic physics communities.

3.3 Workshops and symposia

Workshops and symposia have always been an important part of NORDITA's activities, and this has continued after the move to Stockholm. Altogether 15 such workshops, symposia and research schools were arranged in 2007 and 2008, and in addition numerous workshops have been arranged as part of the scientific programs. There are plans to run an annual Winter School in January to supplement the courses offered to Nordic PhD students at their home institutions and to attract such students as well as postdoctoral fellows to NORDITA.

3.4 Visiting scientists

A special program is set up to provide for short-term or long-term visits by both junior and senior researchers. This allows, for example, for visits each year by scientists who are collaborating with NORDITA staff. NORDITA had about 70 short-term and long-term visits in 2007 and 2008 demonstrating the need and importance of this program.

A particularly prominent visitor in 2007 was the Nobel prize winner Frank Wilczek who visited NORDITA for 3-4 months in the Fall. This visit brought with it a nice side benefit for the Nordic countries, in that Wilczek also visited numerous physics institutes in the Nordic countries while he was in the area. Such dual use of visiting scientists to NORDITA should be encouraged.

3.5 Opportunities for training Nordic students

A recent mission of NORDITA is to take more specific initiatives to support PhD schools in a Nordic context. Already several PhD students are being trained at NORDITA, recent examples being the new PhD students funded by the ERC Advanced Investigator Grant of Axel Brandenburg.

In addition to its large potential in supervising PhD students on their projects, NORDITA also envisions setting up a graduate lecture program to contribute to the training of the PhD students in the area. NORDITA staff members are already involved in teaching PhD courses at the surrounding universities on a voluntary basis. One can also envision courses initiated and lectured by NORDITA staff, and organized so that students in the entire Nordic region can participate, but this might require a general system for accrediting NORDITA courses at the various Nordic universities.

4. Practical, Organizational and Financial Issues of Importance for Future NORDITA

4.1 Long-term financial framework

The excellent scientific health and the robust Nordic dimension of NORDITA at its new Stockholm location justify fully the establishment of a secure long-term financial framework. Indeed, without such a framework it will prove difficult to attract and retain top-level scientific faculty. We consider it reasonable to expect a continuation of basic funding by the Nordic Council of Ministers at the current rate for at least four or five years from 2010 onwards. The two host universities in Stockholm, SU and the KTH, should be congratulated for their vision in each contributing to the operating expenses of NORDITA during the initial phase following its transfer to Stockholm, and also subsidizing its facilities and housing requirements. We note that the Deans of SU and KTH both express their satisfaction with the positive impact on their institutions of NORDITA's move to Stockholm, and we consider it reasonable to expect the continuation of their support as long as funding from the Nordic Council of Ministers is forthcoming. We also recall that the quality of the NORDITA research program has been recognized at the European level via, in particular, the award of a major ERC grant that has enabled a substantial expansion of NORDITA's funding and scientific impact.

We encourage NORDITA in its efforts to expand and diversify its funding through applications to other sources. We think that the extensive Nordic reach of NORDITA merits recognition in the form of financial support from the research councils in individual Nordic countries. We note that another NORDITA faculty member is applying for an ERC grant, and encourage other faculty members to do likewise. NORDITA is already participating in EC

Marie Curie ITNs, and may be expected to continue to be a valuable partner in such proposals. We would also encourage NORDITA to explore actively the possibilities for additional funding via private foundations such as the Wallenberg, Kavli and Wenner-Gren foundations. As discussed below, we also think that NORDITA should be able to gather support from other neighborhood institutions in addition to SU and KTH.

4.2 Institutional partnerships

We recall that one of the primary motivations for moving NORDITA to Stockholm was the enthusiastic support offered by SU and KTH, and we congratulate both SU and KTH on being truly excellent hosts. The partnerships between NORDITA, SU and KTH have brought considerable scientific synergies to all the partners. In particular, we note that the deans of SU and KTH both expressed to us their happiness with the presence of NORDITA, specifically because of the perceived benefits to their institutions.

We note that scientific collaboration between NORDITA and Uppsala University has also sprung up since the move, particularly in the area of field and string theory, and we note that there are promising research interests in common with the Karolinska Institutet, particularly in the area of biophysics and neuroscience. We therefore encourage NORDITA to pursue options for closer relations with these institutions, and to seek institutional partnerships with them that are analogous to those with SU and KTH. Such partnerships would enhance the stability and independence of NORDITA, and would enhance the global scientific profile of the region. The strength of NORDITA's Nordic linkages ensures that closer partnerships with regional universities can be developed to the advantage, not the detriment, of other Nordic universities.

4.3 Administrative support and technical infrastructure

The expansion of NORDITA made possible by the ERC grant has entailed the short-term need to use two buildings to accommodate NORDITA. It is generally recognized that this arrangement is not optimal, and should be only a temporary expedient. It is clearly desirable to accommodate all of NORDITA in the same building as soon as possible, and we are glad to hear that this is envisaged in the upcoming extension of the AlbaNova campus. Since this may take some time to realize, we encourage the host universities to explore earlier opportunities to accommodate all of NORDITA in a single building, even on a provisional basis.

Our discussions with postdocs and students revealed a high level of satisfaction with the welcome they have received at NORDITA, as well as the general attitude and helpfulness of the Director, Deputy Director, administrative and technical staff during NORDITA's initial phase in Stockholm. However, our impression is that the support staff is working at or beyond full capacity, and we are glad to hear it is planned to expand both the administrative and computer staff.

We note a general desire that NORDITA should make its information about job conditions, health insurance, social security and housing more easily available. More than one postdoc expressed surprise to discover after arrival that he would not be taxed on his income from NORDITA, and there was general confusion about the accompanying benefit package. It is important not only that NORDITA people be reassured that they have full health and accident

insurance, but also they know how to use this both in Sweden and elsewhere. It is generally recognized that housing is an issue in Stockholm, and several postdocs urged that information how to seek local housing be provided as soon as job offers are accepted.

As in many institutions, we heard many calls for improved computer support, most of which could be addressed by the planned increase in computer support staff. Another issue is the need for better and simplified access to electronic journals. People at NORDITA should have immediate and broad access to the electronic library collections of the host universities.

Once the immediate administrative and technical needs are fully addressed, it would be desirable to update and maintain a complete database of NORDITA alumni. This would enable the scientific, educational and Nordic benefits of NORDITA to be measured, monitored and appreciated more readily.

4.4 Governance

The academic independence of NORDITA from the host universities is generally appreciated, including by their deans. The Board is fully aware of its responsibility to ensure that close contacts with other Nordic universities are maintained. The relationship between the Board and the Director is running very smoothly. The successful impact of the present Director demonstrates the value of appointing to this position a prominent scientist who is resident at NORDITA and devotes to it his full attention. In the interests of continuity, we believe that the Board should retain the option of extending a Director for a second three-year term in suitable cases. The role of the Deputy Director in assuring the effective liaison with the rest of the AlbaNova campus is universally appreciated.

5. Future NORDITA for Various Financial Scenarios

5.1 Increase of 25%

As discussed above, there are several opportunities for expanding NORDITA's current successful activities, which would be facilitated by such an increase in the budget. Academically, this would permit the expansion of the senior faculty to four, which would enable NORDITA to establish a strong presence in another scientific area. Prime candidates include cosmology and computational neuroscience. Such a budget increase could also be used to finance a significant expansion of the Nordic role of NORDITA setting up a graduate lecture program by covering the expenses of visiting students and possibly external faculty. Also, additional resources could be made available to the programs for visiting scientists: in addition to increasing their numbers, also their conditions could be improved, enabling the quality of the visitor programs to be optimized. An increase in funding would also make possible the acquisition of a dedicated computer cluster that would enable NORDITA to play a more prominent role in computationally-intensive areas of theoretical physics, such as those involving extensive simulations or data-mining.

5.2 Unchanged level

This would enable the departing faculty to be replaced, and the present scope of NORDITA programs to be maintained. We would not advocate any substantial reassignment of the

present budget allocations to different areas of NORDITA's activities. It would be regrettable not to be able to exploit any of the scientific opportunities mentioned above.

5.3 Reduction of 25%

This would entail a drastic curtailment of NORDITA's present activities. In the short term, NORDITA could adjust to a reduced budget by delaying the replacement of one of its retiring faculty members. However, in the longer term it would be unthinkable, in our view, for NORDITA not to be present in the three areas of theoretical physics it currently covers, namely subatomic physics, condensed-matter physics (in the most general sense) and astrophysics. Dropping any one of these areas would narrow NORDITA's scientific range to the detriment also of the remaining areas. Hence, any substantial reduction in NORDITA's budget would require a drastic curtailment of its programs, workshops and symposia, to the detriment of the benefits it brings to the wider Nordic community. Either the number of such activities would have to be reduced, or the levels of support to visiting scientists would need to be reduced, or both.

6. Conclusions

Our principal conclusion is that NORDITA's challenging move from Copenhagen to Stockholm has been a success. Credit is shared among several groups: the host universities and their leaders who have provided strong support while not intruding on NORDITA's independence; Director Larus Thorlacius and Deputy Director Ulf Walhgren, who have addressed the considerable logistical challenges of the move with skill and optimism; and the faculty and staff, who have made the personal adjustments necessary to accommodate the move while maintaining a high level of science.

The committee reached consensus on several steps that could further strengthen NORDITA-Stockholm:

- NORDITA needs a stable financial plan, one that will allow the Director and faculty to focus their attention and energies on the Institute's main mission, enhancing Nordic science.
- The Institute should be housed under one roof, at the earliest opportunity: this will qualitatively improve the environment for both visitors and the young researchers, and encourage the kind of interdisciplinary interactions important in modern science.
- It is important to move forward expeditiously on the plan to have at least three tenured professors in Stockholm. This is necessary to provide an appropriate balance between professors and assistant professors/postdocs/students.
- We support plans to increase the cycle of scientific programs, workshops, and symposia from 7 months of activity per year to 10 months, provided this increase is driven by proposal pressure. The current success rate of new proposals of about 50% is appropriate, helping to keep standards high.
- The support provided by the administrative staff is widely and appropriately praised. However, the staffing level is exceptionally lean, when compared to comparable institutes elsewhere. We feel that some increase in administrative and computer service personnel is warranted and will lead to more efficient operations.

- We urge NORDITA, the host universities, and institutes and universities throughout the Nordic countries to continue to think creatively about scientific and educational partnerships designed to enhance Nordic science.

The committee is confident that NORDITA is on a path to continue its great tradition of excellence in support of Nordic science and education.

CERN/Seattle/Ås, 18.04.2009

John Ellis Wick Haxton Gaute T. Einevoll

Schedule for NORDITA site visit – 02.-03.04.2009

April 1st

- 19.00-22.00: Committee meets for dinner to make final plans for site visit

April 2nd

- 09.00-10.00: Initial meeting with Directors:
  - Director Larus Thorlacius
  - Vice Director Ulf Wahlgren
- 10.00-12.00: Meeting with NORDITA Faculty:
  - Prof. Axel Brandenburg, Astro
  - Prof. Paolo Di Vecchia, High Energy & Nuclear
  - Prof. Larus Thorlacius, High Energy & Nuclear
  - Prof. Ulf Wahlgren, Quantum Chemistry
  - Asst. Prof. Jani-Petri Martikainen, Condensed Matter, Statistical & Bio
- 12.00-13.30: Lunch
- 13.30-14.00: Telephone conference with absent NORDITA faculty members
  - Prof. Chris Pethick, Astro, Condensed Matter, Statistical, Bio, High Energy & Nuclear (Copenhagen)
  - Prof. John Hertz, Condensed Matter, Statistical & Bio (Copenhagen)
  - Asst. Prof. Eddy Ardonne, Condensed Matter, Statistical & Bio
  - Asst. Prof. Ralf Eichhorn, Condensed Matter, Statistical & Bio
- 14.00-15.30: Meeting with the NORDITA Board
  - Thordur Johnsson, Iceland (chairman)
  - Poul Henrik Damgaard, Denmark
  - Matti Manninen, Finland
  - Einar Gudmundson, Iceland
  - Susanne Viefers, Norway
  - Per Osland, Norway (suppleant)
- 15.30-16.15: Meeting with representatives of the Nordic theoretical physics community
  - Tommy Olsson, Thordur Jonsson, Matti Manninen, Per Osland, Susanne Viefers, Dan Henningson
- 16.15-17.00: Meeting with representatives of the host universities in Stockholm
  - Anders Karlhede, Dean of Physics, Stockholm University
  - Folke Snickars, Dean, KTH
- 17.00-17.30: Break
- 17.30-18.30: Summarizing meeting with NORDITA Directors
  - Director Larus Thorlacius
  - Vice Director Ulf Wahlgren

April 3rd

- 09.00-11.00: Meeting with NORDITA Fellows
- 11.00-17.30: Committee work together on report