



**Stellungnahme zum
Mathematischen Forschungsinstitut Oberwolfach (MFO)
Oberwolfach**

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Vorbemerkung

Die Einrichtungen der Forschung und der wissenschaftlichen Infrastruktur, die sich in der Leibniz-Gemeinschaft zusammengeschlossen haben, werden von Bund und Ländern wegen ihrer überregionalen Bedeutung und eines gesamtstaatlichen wissenschaftspolitischen Interesses gemeinsam gefördert. Turnusmäßig, spätestens alle sieben Jahre, überprüfen Bund und Länder, ob die Voraussetzungen für die gemeinsame Förderung einer Leibniz-Einrichtung noch erfüllt sind.¹

Die wesentliche Grundlage für die Überprüfung in der Gemeinsamen Wissenschaftskonferenz ist regelmäßig eine unabhängige Evaluierung durch den Senat der Leibniz-Gemeinschaft. Die Stellungnahmen des Senats bereitet der Senatsausschuss Evaluierung vor. Für die Bewertung einer Einrichtung setzt der Ausschuss Bewertungsgruppen mit unabhängigen, fachlich einschlägigen Sachverständigen ein.

Vor diesem Hintergrund besuchte eine Bewertungsgruppe am 17. und 18. März 2009 das Mathematische Forschungsinstitut Oberwolfach (MFO). Ihr stand eine vom MFO erstellte Evaluierungsunterlage zur Verfügung. Die wesentlichen Aussagen dieser Unterlage sind in der Darstellung (Anlage A dieser Stellungnahme) zusammengefasst. Die Bewertungsgruppe erstellte im Anschluss an den Besuch den Bewertungsbericht (Anlage B). Das MFO nahm dazu Stellung (Anlage C). Der Senat der Leibniz-Gemeinschaft verabschiedete am 26. November 2009 auf dieser Grundlage die vorliegende Stellungnahme. Der Senat dankt den Mitgliedern der Bewertungsgruppe und des Senatsausschusses Evaluierung für ihre Arbeit.

1. Beurteilung und Empfehlungen

Der Senat schließt sich der Beurteilung und den Empfehlungen der Bewertungsgruppe an.

Das Mathematische Forschungsinstitut Oberwolfach (MFO) verfolgt mit herausragendem Erfolg die Aufgabe, eine außergewöhnliche wissenschaftliche Infrastruktur für die internationale Mathematik bereitzustellen. Um seine Aufgabe in der Förderung der Grundlagenforschung der reinen und angewandten Mathematik angemessen durchführen zu können, betreibt das MFO ein umfangreiches Programm unterschiedlicher Formen von wissenschaftlichen Workshops und Gastaufenthalten, das dessen internationale Anerkennung und Wiedererkennbarkeit begründet. Als Tagungs- und Forschungseinrichtung bietet das Institut Wissenschaftlerinnen und Wissenschaftlern an, sich als Koordinatoren bzw. als Teilnehmer in den verschiedenen Programmtypen am MFO zu bewerben. In der Gestaltung der Programmformen sowie in der Unterstützung und Durchführung der vom MFO ausgewählten und geförderten Veranstaltungen in den verschiedenen Programmen besteht das zentrale und besondere Arbeitsergebnis des Instituts.

Das MFO hat sein Programm-Portfolio in den vergangenen Jahren stark ausgebaut und beachtlich entwickelt. Das wissenschaftliche Programm betreibt es auf höchstem internationalem Niveau. Die bestehenden Programmstrukturen und Auswahlverfahren haben sich in bester Weise bewährt. Vor dem Hintergrund des spezifischen Charakters des MFO, das den Forschungsprozess organisiert, aber nicht selbst unmittelbar forscht, war das Drittmittelaufkommen in den vergangenen Jahren unerwartet und bemerkenswert hoch. Die Empfehlungen des Wissenschafts-

¹ Ausführungsvereinbarung zum GWK-Abkommen über die gemeinsame Förderung der Mitgliedseinrichtungen der Wissenschaftsgemeinschaft Gottfried Wilhelm Leibniz e.V.

rats aus dem Jahre 2000, der dem Institut eine außerordentlich hohe Qualität bescheinigte, hat das MFO angemessen aufgegriffen.

Die **Nachwuchsförderung** genießt einen hohen Stellenwert am MFO. Dafür hält das Institut eine Reihe von Programmelementen vor, die sich an den spezifischen Bedürfnissen des wissenschaftlichen Nachwuchses orientieren. Sie ermöglichen herausragenden Nachwuchswissenschaftlern an unterschiedlichen Karrierepunkten einen Aufenthalt in Oberwolfach. Die in ihrer Breite vortreffliche Förderung reicht von projektorientierten Forschungsaufenthalten bis hin zur aktiven Einbindung in das Workshop-Forschungsprogramm.

Als Tagungs- und Forschungseinrichtung bietet das MFO den institutionellen Rahmen für wissenschaftliche **Kooperationen**. Institutionelle Kooperationen bestehen über den Direktor insbesondere mit der Universität Kaiserslautern. Darüber hinaus ist das Institut hervorragend in die deutsche und internationale mathematische Forschungslandschaft eingebunden. Das Institut besitzt zu Recht eine national wie international sehr hohe Reputation und diente in der Vergangenheit mehrfach als institutionelles Vorbild für vergleichbare Gründungen im europäischen und außereuropäischen Ausland.

Leitung und Verwaltung des MFO nehmen ihre Aufgaben erfolgreich und mit bemerkenswertem Engagement wahr. Die im Nebenamt tätige Institutsleitung wird dabei unmittelbar durch die Wissenschaftliche Kommission unterstützt, die gemeinsam mit der Leitung die wissenschaftliche Arbeitsplanung gestaltet und mit dieser als Gesamtgremium über die Förderung von beantragten Veranstaltungen entscheidet. Der Initiative der Institutsleitung ist insbesondere die eindrucksvolle Entwicklung des Programm-Portfolios und der Öffentlichkeitsarbeit zu verdanken. Die Zusammenarbeit zwischen Wissenschaftlicher Kommission und Geschäftsführung des MFO einerseits sowie die Kooperation des MFO mit den Organisatoren und den sonstigen Gästen andererseits funktioniert ausgezeichnet. Die logistische Unterstützung der Gäste durch die Hausverwaltung und -wirtschaft ist hervorragend. Der Wissenschaftliche Beirat berät die Institutsleitung und die Wissenschaftliche Kommission bestens hinsichtlich der langfristigen Strategie des MFO.

Für die Arbeit der nächsten Jahre werden folgende **Anregungen, Hinweise und Empfehlungen**, die im Bewertungsbericht weiter ausgeführt sind, hervorgehoben:

- Es gelingt dem MFO hervorragend, aktuelle und relevante Themen der mathematischen Forschung für wissenschaftliche Veranstaltungen auszuwählen. Es wird unabhängig davon empfohlen, dass das MFO im Rahmen seines etablierten Programm-Portfolios eine weitere fachliche Öffnung ins Auge fasst, um damit in noch stärkerem Maße die Zusammenarbeit mit wissenschaftlich benachbarten Gebieten zu fördern. Darüber hinaus wird angeregt mit gezielten Ausschreibungen auf das wissenschaftliche Programm aufmerksam zu machen, um das vorhandene Nutzerpotential noch weiter auszuschöpfen.
- Das MFO bietet ein beachtliches Spektrum von auf Nachwuchswissenschaftlerinnen und Nachwuchswissenschaftlern zugeschnittenen Programmelementen. Eines davon ist das jüngst sehr erfolgreich etablierte Oberwolfach Leibniz Fellow Programm. Es wird begrüßt, dass das MFO für die Fellows in der Regel eine Aufenthaltsdauer von höchstens drei Monaten anstrebt. Darüber hinaus sollte das Institut durch geeignete Maßnahmen eine Erhöhung des Wettbewerbs um die zu vergebenden Plätze anstreben und für eine kontinuierliche Einbindung der Nachwuchswissenschaftlerinnen und Nachwuchswissenschaftler in die laufen-

den Programme Sorge tragen. Aufgrund seiner strategischen Bedeutung innerhalb der international ausgerichteten Nachwuchsförderung des MFO wird empfohlen, das bisher drittmittelfinanzierte, in seiner Grundstruktur sehr überzeugende Programm zu verstetigen und im Institutshaushalt zusätzlich und dauerhaft zu verankern. Dass das MFO auch Studierende und fortgeschrittene Schüler etwa im Rahmen der „Mathematik-Olympiade“ anspricht, wird sehr begrüßt. Entsprechende Bemühungen sollten fortgeführt werden.

- Die Mitgliedschaft in der Wissenschaftlichen Kommission ist, mit Option auf einmalige Wiederbestellung, auf vier Jahre begrenzt. Die Kommission erneuert sich durch Kooptation und wird vom Vorstand der Gesellschaft für Mathematische Forschung e.V. berufen. Das Vorschlagsrecht liegt bei den Mitgliedern. Zusätzlich sollten weitere Vorschläge von anderer Seite, möglichst aus dem Ausland, erbeten werden. Unabhängig davon wird begrüßt, dass das MFO bei der Besetzung des Gremiums eine weitergehende Internationalisierung plant (vgl. Stellungnahme der Einrichtung zum Bewertungsbericht).
- Der derzeitige Direktor tritt nach seiner regulären Amtszeit in diesem Jahr eine Seniorprofessur an, die das Land Rheinland-Pfalz bis 2012 vorsieht. Die im Zusammenhang mit seiner Nachfolge vorgelegten Überlegungen des Wissenschaftlichen Beirats sind sehr überzeugend. Ein neuer Direktor sollte – anders als bisher – nicht nur 20 % im Nebenamt am MFO tätig sein. Vielmehr ist es wegen der in den vergangenen Jahren gewachsenen Aufgaben nötig, dass die Tätigkeit am MFO 50 % der Arbeitszeit beträgt. Besetzt werden könnte die Stelle dadurch, dass – wie bislang – eine Wissenschaftlerin oder ein Wissenschaftler von einer im weitesten Sinne benachbarten Hochschule für die Arbeit am MFO freigestellt wird. Aber auch der Weg, mit einer kooperationswilligen benachbarten in- oder ausländischen Hochschule eine gemeinsame Berufung durchzuführen, sollte erwogen werden.
- Im Zusammenhang mit den in der Vergangenheit stark gewachsenen Aufgaben im Bereich Öffentlichkeitsarbeit, Wissenstransfer, Administration, Entwicklung des Programm-Portfolios sowie der editorischen Betreuung der in Oberwolfach neu geschaffenen Schriftreihen ist es erforderlich, eine Stelle für einen weiteren wissenschaftlichen Assistenten am MFO vorzusehen. Für die Bewältigung der gestiegenen hauswirtschaftlichen Aufgaben bedarf es zudem einer weiteren Kraft in der Hauswirtschaft. Bund und Ländern wird empfohlen, dafür die erforderlichen Mittel zusätzlich bereitzustellen.

Das MFO ist eine international weit sichtbare und hoch anerkannte Einrichtung, die maßgeblich zur Reputation mathematischer Forschung im globalen Kontext beiträgt. Die vom MFO bereitgestellte wissenschaftliche Infrastruktur ist von hoher gesellschaftlicher Relevanz und wird von keiner anderen Einrichtung in vergleichbarem Umfang bereitgehalten. Das MFO erfüllt nach Auffassung des Senats die Anforderungen, die an Einrichtungen von überregionaler Bedeutung und gesamtstaatlichen wissenschaftspolitischen Interesse zu stellen sind. Die vom Institut in hervorragender Weise betreuten wissenschaftlichen Programme können innerhalb einer Hochschule in der vom MFO verfolgten Form nicht realisiert werden. Eine Eingliederung in eine Hochschule wird daher nicht empfohlen.

2. Zur Stellungnahme des MFO

Das MFO hat zum Bewertungsbericht Stellung genommen (Anlage C).

Das Institut begrüßt die positive Bewertung. Erfreut zeigt es sich insbesondere über die positive Einschätzung der jüngsten Entwicklung seines wissenschaftlichen Programmportfolios sowie die darin eingebundenen Aktivitäten zur Förderung des wissenschaftlichen Nachwuchses. Das MFO dankt der Bewertungsgruppe für die nachhaltige Bestätigung der am MFO vorgesehenen Veränderungen der Leitungsstruktur. Es weist darauf hin, dass sein wissenschaftliches Programm mittels eines halbjährlichen Rundbriefs mehr als 7.000 Empfängern bekannt gemacht werde. Mit Bezug zur Empfehlung, das Vorschlagsrecht für die Wissenschaftliche Kommission zu erweitern verweist das MFO darauf, dass es eine weitergehende Internationalisierung des Gremiums anstrebe.

Der Senat begrüßt den konstruktiven Umgang mit den ausgesprochenen Empfehlungen.

3. Förderempfehlung

Der Senat der Leibniz-Gemeinschaft empfiehlt Bund und Ländern, das MFO als Einrichtung der Forschung und wissenschaftlichen Infrastruktur, die in erheblichem Umfang wissenschaftliche Infrastrukturaufgaben wahrnimmt, auf Grundlage der Ausführungsvereinbarung WGL weiter gemeinsam zu fördern.

Annex A: Presentation

Mathematisches Forschungsinstitut Oberwolfach (MFO)¹ Oberwolfach

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¹ This presentation, compiled by the Evaluation Office, has been approved by the institute and the relevant Federal and State departments.

1. Development and Funding

The Oberwolfach Mathematical Research Institute (Mathematisches Forschungsinstitut Oberwolfach, MFO) was founded in 1944. Institutionally, the MFO was financed jointly by the state of Baden-Württemberg and the Federal Government until 1977, when funding was taken over by the State of Baden-Württemberg. Over the years several foundations supported special programmes of the MFO and the library in a substantial manner. The buildings, e.g., were donated by the VolkswagenStiftung in 1988.

After successful evaluation by the Science Council (Wissenschaftsrat) in 1999, the MFO became a member of the Leibniz Association in 2005. Since 2006 the MFO has been co-funded by the Federal Government and the Länder in a ratio of 50:50. The responsible federal ministry is the Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung, BMBF), the responsible state is Baden-Württemberg with its Ministry of Science, Research and the Arts (Ministerium für Wissenschaft, Forschung und Kunst Baden-Württemberg, MWK).

2. Mission

Tasks: According to the statutes of the MFO the main foci of the institute's activities comprise the promotion of research in mathematics, the intensification of scientific collaboration, the intensification of education and training in mathematics and related areas as well as the promotion of young scientists. However, the MFO is not a research institute in a classical sense. Rather the institute's conception is based on a special disciplinary culture of mathematical research, which benefits immensely from an extensive exchange of ideas and an intensive personal communication during certain research periods. The main task of the MFO therefore is to carefully select and to enable research stays of guest scientists of short (e.g. workshops) or longer (e.g. Research in Pairs-programme (RiP)) duration. The institute offers its guest researchers an infrastructure embedded in an international environment, which enables concentrated work during their stay at Oberwolfach. While the institute itself has no permanent research positions guest researchers are doing research in topics of fundamental as well as of applied mathematics covering all important mathematical subjects and latest developments.

According to the MFO high level scientific quality is achieved by a rigorous selection of research subjects, organisers and participants in various research programmes. Research and some of the institute's service activities are mainly carried out in the following scientific programmes:

Workshop Programme: This is the traditional, well-established programme of weekly workshops in a topical area with usually 45-50 participants. Participation is by personal invitation by the director, upon recommendation of the organisers. The workshops are organised by leading international experts in the field. Annually there are about 40 workshops with a capacity of about 2000 person weeks.

Mini-Workshop Programme: In this programme, it is possible to hold small weekly workshops in certain fixed weeks. In order to be able to quickly respond to new developments these workshops are more focussed on hot topics. They especially address junior researchers. Mini-workshops have approximately 15 participants, the topics are selected on short notice. Annually there are 12 mini-workshops with a total capacity of about 200 person weeks.

Research in Pairs Programme: This programme allows teams of two to four researchers from different places to work on joint research projects for periods ranging from two weeks up to three months. Projects from all areas of mathematics can be supported by this programme. In particular, interdisciplinary cooperation is encouraged. The average total capacity of the RiP programme annually amounts to about 240 person weeks.

Oberwolfach Arbeitsgemeinschaft: The Arbeitsgemeinschaft forms one of the oldest programmes of the institute. In difference to ordinary workshops it is more like a course on important new developments in mathematics, except that the participants have to give the talks and present recent results found by other researchers. In this sense the Arbeitsgemeinschaft operates like a very intense seminar, which also helps to counteract increasing specialisation. Organisers and topics for the next Arbeitsgemeinschaft are proposed during the current Arbeitsgemeinschaft. Participation is by application to the organisers.

Oberwolfach Seminars: The Oberwolfach Seminars are schools, organised by leading experts in the field and aimed at post-docs and Ph.D. students from all over the world. The aim is to introduce the 25 participants to a particular interesting new development.

Oberwolfach Leibniz Fellows: Beginning in 2007 the MFO has set up a new programme for postdoctoral researchers. This programme is supported by the Leibniz Association within the framework of the Joint Initiative for Research and Innovation (Pakt für Forschung und Innovation) for a 3-year-period (2007–2009). The focus of this programme is to support outstanding young mathematical researchers in the realisation of proposed research projects, possibly with a collaborator or in a small group.

International Significance: In its opinion the MFO has set standards with its successful workshop programme or as David Mumford (Fields medallist and former President of the International Mathematical Union) has pointed out: “Oberwolfach has been a unique and remarkable catalyst for mathematical ideas for more than five decades”. In several countries new institutes have been founded nearly identical to the Oberwolfach model, e.g. CIRM (Centre International des Rencontres Mathématiques) in Luminy/France or BIRS (Banff International Research Station for Mathematical Innovation and Discovery) in Banff/Canada. The MFO considers itself as the worldwide best-known and most appreciated establishment among existing institutes with a comparable structure. Every year the MFO is visited by approx. 2,500 researchers, with about 30 % coming from Germany, 40 % from other European countries, and 30 % from overseas (with a quota of 20 % from the USA). According to the MFO most of the scientists visiting the MFO are leading experts in their special fields covering all areas of pure and applied mathematics.

Interest in the MFO’s activities in terms of science policy: The MFO assesses that its recognition and worldwide significance increases the international reputation of mathematics and science as a whole in Germany. Due to its standing in the mathematical community it particularly encourages international contacts of German scientists in their relevant research activities with other scientists. Primarily, graduate students, post-docs, and professors from German universities profit from Oberwolfach.

Long-term goals: The MFO will continue to experiment with novel programmes. Those recently introduced, such as the Oberwolfach Leibniz Graduate Students (introduced in 2009) or the Oberwolfach Leibniz Fellows (introduced in 2007), will be evaluated and adjusted accordingly. In future it will also be necessary to improve the identification of outstanding young researchers.

In order to invite those to the workshop programme the institute will need to substantially raise funds for their support.

3. Institutional Structure

The MFO has the legal structure of a non-profit private limited company (gGmbH) with the Society for Mathematical Research (Gesellschaft für mathematische Forschung e.V., GMF) as its only associate. The institute is run by the director and a deputy director, both appointed by the Administrative Council for a 5-year-period with the possibility of reappointment. The Administrative Council of the MFO, in which the State of Baden-Württemberg (MWK), the Federal Government (BMBF) and the Länder (GWK) as funding agencies are represented, decides on the middle and long-term developmental and financial planning as well as the programme budget of the MFO. The Scientific Advisory Board (SAB), founded in 2005, consists of six to eight internationally distinguished external scientists and reflects the breadth of scientific themes represented at the MFO. It advises the Administrative Council and the director with regard to the medium and long-term strategy. Its members are appointed by the Administrative Council of the MFO for a maximum of two office terms of four years each.

The GMF is a non-profit association (gemeinnütziger Verein) consisting of about 70 outstanding mathematicians. It forms the Scientific Committee, which evaluates and decides in accordance with the director on the scientific applications within the scientific programme of the MFO. The Scientific Committee consists of 20 to 25 leading researchers, covering all areas of mathematics. In order to constitute the workshop programme, the committee meets once a year at the MFO to consult and decide on all applications received (together with the director). According to the MFO, the scientific independence of the committee, paired with scientific excellence and balance as the sole criterion for its decision-making, constitutes the main reason for the ongoing success of the MFO's work.

Participants of the workshop and mini-workshop programme as well as in the Arbeitsgemeinschaft and the Oberwolfach Seminars are invited by the director on the nomination by and in accordance with the corresponding chairmen. However, the MFO not only shapes its institutional profile by way of carefully examining applications, but also actively directs its scientific programme by selectively targeting important topics, activities and research groups in addition to the established application procedure. The percentage of invited applications compared to all proposals received amounts to about 30%.

Quality assessment of the work of the MFO is carried out by the Scientific Advisory Board on an annual basis: the board meets in Oberwolfach once a year at the same time as the Scientific Committee. Its suggestions are based on a report, relevant documentation of the director and on discussions with the members of the Scientific Committee, workshop participants and staff members of the MFO.

4. Work Results

The institute publishes the Oberwolfach Reports (OWR), the Oberwolfach Preprints (OWP) and the Lecture Notes Oberwolfach Seminars.

Since 2004, the MFO has published official reports of every workshop, containing extended abstracts of talks presented within the workshop and mini-workshop programme. The so-called Oberwolfach Reports (OWR) are published together with the Publishing House of the European

Mathematical Society in succession to the former "Tagungsberichte". The aim is to report periodically upon the state of mathematical research, and to make these findings available to the mathematical community. Annually, the OWR is published in four issues with more than 3.000 pages in total. The print run is 350. Since January 2007, the institute offers participants of the RiP Programme and the Oberwolfach Leibniz Fellows Programme the opportunity to publish their results as Oberwolfach Preprints. These preprints are freely available on the institute's website. The publication of Oberwolfach Seminars in the Lecture Notes series Oberwolfach Seminars at Birkhäuser facilitates circulation of interesting new developments in mathematics within the mathematical community. Furthermore, there are selective publications of special interests such as annual reports, brochures of particular lectures or festival events like the 60th anniversary of the MFO in 2004. Moreover, in the Year of Mathematics in 2008, the MFO together with the Oberwolfach Stiftung have published the book "Mathematik – Motor der Wirtschaft".

The main part of research initiated by the MFO is published by the researchers at their home institutes. Evidence for the number of research results is provided by the hit list to the search criterion 'Oberwolfach' in the electronic reviews of the mathematical publications 'Zentralblatt der Mathematik' (ZMATH) and 'Mathematical Reviews' (MathSciNet). At present an electronic search shows 4,504 resp. 5,488 hits on publications mentioning Oberwolfach. In 2008 a search on the internet using Google produced more than 17,900 hits for the search string "Mathematisches Forschungsinstitut Oberwolfach", a search in Scirus (Elsevier) more than 9,100 hits. As there is a tight correlation between guest stays and later publications in the case of the MFO this means that approx. 1,500 publications annually profit from work and discussions at Oberwolfach.

In order to obtain direct feedback on the research at the MFO, the director sent a circular to the many workshops' organizers since the last evaluation in the year 2000. He specifically asked organisers to report on excellent scientific results or collaborations, which were stated or initiated at their respective workshops. About 130 replies were received, providing not only details of the overall productivity of the workshops, but also revealing several cases of scientific breakthroughs achieved at Oberwolfach workshops.

The MFO is strongly concerned with the transfer of knowledge to the public. In 2008, e.g., the MFO conducted the touring exhibition 'IMAGINARY' within the larger framework of Germany's Year of Mathematics. The BMBF-sponsored exhibition toured 13 larger German cities and successfully dealt with the visualization of algebraic and differential geometrical surfaces.

5. Co-operations

Inviting the best researchers leads to fruitful cooperations between MFO and universities, research institutes and research groups. The vast majority of German universities contribute to the work of the institute in making participation and organisation of MFO workshops possible. As far as the promotion of postdoctoral students (Oberwolfach Leibniz Fellows) is concerned, the MFO is participating in the European Postdoctoral Institute (EPDI), a virtual institute which links leading research institutes in mathematics in Europe. Since postdoctoral students from all over Europe can apply to the EPDI without any restrictions, no institution is privileged.

Co-operation with private sector institutions is given e.g. by memberships of relevant representatives in the board of the Oberwolfach Stiftung, which provides important intellectual and financial support to the MFO. Another form of co-operation results from the participation of scientists

from technology-transfer institutes and from the private sector in general in workshops. Also support of doctoral students and young researchers in the Oberwolfach Seminars – made possible with funds from the Siemens Foundation (2008–2013) – gives proof of enhanced contact of the MFO to the private sector.

Moreover, the MFO cooperates with the BIRS in the planning and coordination of workshop programmes in order to avoid simultaneous workshops with similar topics.

6. Promotion of Junior Academics

At the MFO, the promotion of junior scientists (doctoral students and recent post-docs) has a high priority and is achieved by six Oberwolfach-Seminars annually for a total number of 150 junior scientists and the Oberwolfach-Leibniz-Fellows programme, which supports up to 12 post-docs a year. Furthermore the Oberwolfach and the John Todd Prize are awarded to excellent young scientists on a triennial basis.

Up to ten outstanding junior scientists (doctoral and post-doc students) participate each week in differing workshops, depending on the support of limited third party funding. This procedure also applies to the mini-workshops programme. In consequence approx. 300 junior scientists (person-weeks) are supported. The sponsorship of these junior scientists is made possible with the help of the US American National Science Foundation (2003–2011) and the Oberwolfach Leibniz Graduate Students project (OWLG, 2009–2011). Moreover, the annual winners of the student prize of the DMV (Deutsche Mathematiker-Vereinigung) are invited to a workshop concerning their field of interest. The MFO also provides institutional resources for a training camp for pupils participating at the International Mathematical Olympiad.

Training measures for MFO employees in scientific fields are realised externally: the habilitation of the assistant to the director at the University of Mainz in 2001 and Ph.D. studies of the system administrator at the University of Kaiserslautern. The MFO offers an apprenticeship in house-keeping. Since the last evaluation 5 apprentices have successfully completed their training.

7. Facilities, Budget and Personnel

Facilities: The MFO consists of three adjacent buildings, which are owned by the GMF: conference and library building, guest house and bungalows. Scientific workshops and other events usually take place in the conference and library building, which also hosts a well-equipped library and computer workplaces.

The guest house comprises 50 standard guest rooms, 8 guest apartments, a large conference room, offices and a dining hall for approx. 80 guests. The bungalows can be used for stays from one to several weeks by visitors accompanied by a further person or their family.

The library covers an area of nearly 800 m² with approx. 45,000 books, approx. 510 print and 3,000 online journals. The total number of bound volumes amounts to approx. 25,000. Wireless connection for laptops is available in the library.

The MFO has got an IT-division with two academic staff members who provide guest researchers and administration staff with effective working conditions. Besides the usual communication media (web, e-mail, remote login, file transfer, office products) this comprises retrieval of literature and access to online scientific journals, use of mathematical software on an application server, and finally technical equipment of lecture rooms and library (data projector, copier,

scanner). In addition, there are three specialized software packages, which were developed by the MFO: a workshop management software, the Oberwolfach References for Mathematical Software (ORMS) and the Oberwolfach Photo Collection. On the application server, accessible to all guest researchers, about ten of the most used mathematical software systems are installed, including commercial software such as Maple, Mathematica, Matlab, Magma, MuPad, and Reduce, and freely distributed software such as Singular, Macaulay2, GAP, and Cocoa.

The MFO has the following hardware available: Internet connection via the Deutsches Forschungsnetz (DFN-Verein) with 20 Mbit/s leased line, LAN with Gigabit Ethernet Backbone and Fast Ethernet Periphery, approx. 12 servers partly for central services, partly as terminal server for the workplaces, in the scientific subnet 20 fixed terminals, 6 workplaces for laptops, 13 rooms with network connection, wireless LAN as well as 13 working places in the administrative subnet.

Budget: During the reporting period the average annual total budget of the MFO was about 3.3 Mio €. The financial support of the MFO by the Federal Government and Länder within this budget (without special funds for renovation measures) amounted to an average of 1.9 Mio € respectively. In addition, the MFO received competition funds of 190 T€ annually for the Oberwolfach Leibniz Fellows programme (OWLF, 2007–2009). In future the MFO will also receive competition funds for the Oberwolfach Leibniz Graduate Students programme (OWLG) amounting to 196 T€ in 2009 and 176 T€ in 2010 and 2011.

The MFO reports that it is making intensive efforts to obtain third-party funds, despite the fact that its operating structure renders such efforts difficult and its programme does not encourage usual project funding by the DFG, the BMBF, or the EU, etc. Third-party funds received in the period 2005–2007 came from e. g. the Marie-Curie-Conference-Programme of the EU, from the United States by the NSF (National Science Foundation) or from the JAMS (Japanese Association of Mathematical Sciences) and even from the DFG for individual support of East European guest researchers. MFO's own revenues (mainly re-imburement of costs by accompanying persons, but also from subscriptions to the Oberwolfach Reports OWR) amounted to approx. 100 T€ annually. Further regular donations were received from the Friends of the MFO (Förderverein) with approx. 700 members (approx. 43 T€ per annum) and from the private sector by the Oberwolfach-Stiftung (approx. 25 T€ per annum).

Personnel: The MFO employees, totalling 29 persons, are divided between the scientific administration, library, IT-division, administrative division, guest service and housekeeping. All of them are paid by basic institutional funding. There is no position on a limited contract. One position is in the scientific administration, two positions in the IT-division, eight people work in the administrative division, two people in the library and 15 in the in-house services. In addition, the MFO employs one vocational trainee.

In future the MFO sees a demand for additional positions in the scientific administration in order to cover the increased scientific administrative duties. This includes support for the director and his assistant particularly in the application and realisation of third-party-funded projects as well as in the administration of publications. Due to the extension of the library building and 9 further guest rooms in the bungalows, the MFO claims that the housekeeping sector needs additional staff, too. Besides this the working situation of the director, who is meeting his obligations for Oberwolfach in addition to a professorship he holds at a neighbouring university, is not satisfactory. The reduction in duties at the home university amounting to two hours per week seems to be insufficient.

The MFO is trying to increase the proportion of women in all fields where women are under-represented. With flexible working hours the MFO actively contributes to compatibility of family and working life. The equal opportunity commissioner has presented an equal opportunity plan at the meeting of the Administrative Council in spring 2008. Regarding guest researchers the MFO claims that quota of women in mathematical research is low worldwide. The MFO, nevertheless, is trying to counteract this fact by actively increasing the quota of women as organisers.

8. Implementation of the Recommendations from the Last Evaluation

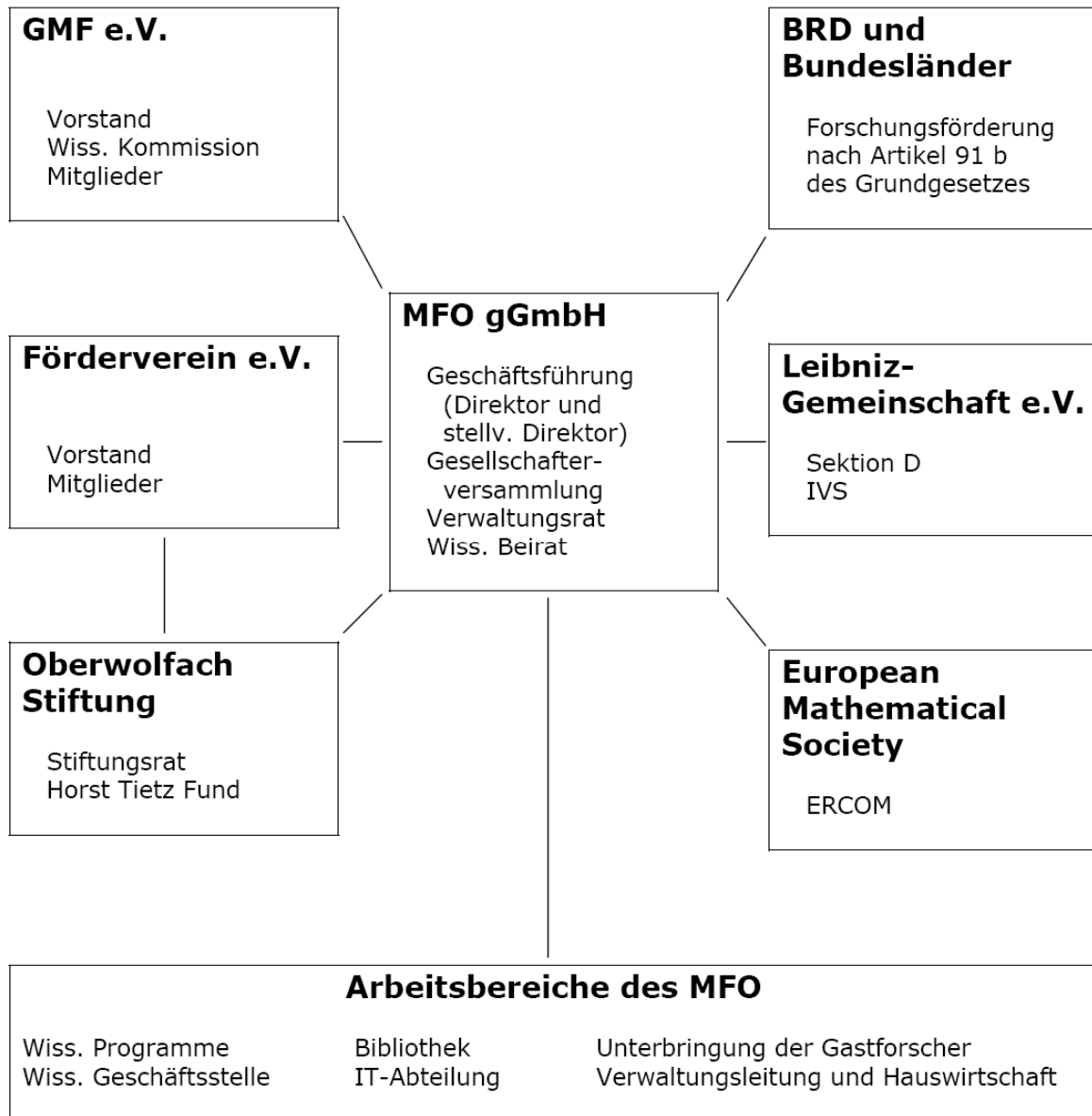
The MFO responded to the recommendations of the German Science Council stated in the evaluation report of 1999/2000:

- a) As recommended the membership of the Scientific Committee of the GMF has been restricted to two periods of office at most (duration of 4 years each). This has been implemented in the statutes of the GMF.
- b) The MFO should aspire to co-operate with partners from the industry: Leading representatives of the industry take part in the annual meeting of the Oberwolfach-Stiftung. One immediate outcome of their membership was the publication of the book "Mathematik – Motor der Wirtschaft". Also, the new support of doctoral students and young researchers in the Oberwolfach Seminars by the Siemens Foundation in the period of 2008–2013 provides proof of enhanced contacts of the MFO with the private sector. Co-operation is also achieved in the participation of scientists from technology-transfer institutes and the private sector in workshops at the MFO.

Appendix 1

Organigramm

(as of December 2008)



Appendix 2

Research Visits

– In the reporting period 2006 to 2008 –

Research visits to the institution

Guests' permanent place of employ- ment	Duration of visit			Number of scholarship holders (OWLF)
	< 1 week	1 week to 3 months	> 3 months	
Total	8125	302	0	15
Germany	2450	75	0	6
Central /Eastern Europe	264	39	0	3
Western Europe	2887	120	0	4
Africa	0	0	0	0
Asia	388	9	0	1
North America	2020	51	0	1
South America	39	4	0	0
Australia, New Zea- land	77	4	0	0

Appendix 3

Revenue and Expenditure¹ (in €1,000)

Revenue		2008			2007			2006		
1.	Basic institutional funding		%		%		%			
	Total sum	2028.0	57.1		1890.0	52.8		1800.0	62.1	
1.1	Joint funding by Federal Government and German States (Länder) ²	2028.0	57.1		1890.0	52.8		1800.0	62.1	
1.1.1	- Amount thereof obtained in competitive allocation process ("SAW-Verfahren")	190.0	5.3		72	2.0				
1.2	Other institutional funding ³									
1.3	Money granted from EU Structural Fund									
2.	Third-party funding for research promotion ⁴									
	Total sum	479,0	13,5		718,0	20,0		347,0	12,0	
	Project funding from		% ⁵			% ⁵			% ⁵	
2.1	German Research Foundation (DFG)	68,0	1,9	14,2	37,0	1,0	5,2	60,0	2,1	
2.2	German Federal Government	184,0	5,2	38,4	54,0	1,5	7,5			
2.3	German State(s)									
2.4	EU				556,0	15,5	77,4	211,0	7,3	
	The total sum of managed EU funds								60,8	
2.5	Foundations	110,0	3,1	23,0						
2.6	Businesses									
2.7	Other project funding	117,0	3,3	24,4	71,0	2,0	9,9	76,0	2,6	
2.8	Funding managed by project partners								21,9	
3.	Income from economic activity									
	Total sum	94,0	2,6		109,0	3,0		100,0	3,5	
3.1	Commissions (private & public, incl. commissioned research)									
3.2	Licences, patent utilisation									
3.3	Publications	35,0	1,0		35,0	1,0		35,0	1,2	
3.4	Services	59,0	1,6		74,0	2,0		65,0	2,3	
4.	Other income	953,0	26,8		865,0	24,2		650,0	22,4	
	renovation measures (Baden-Württemberg)	36,0	1,0		432,0	12,1		56,0	1,9	
	renovation measures (federation/Baden-Württemberg)	809,0	22,8		0,0			0,0		
	library extension (VWStiftung/Klaus Tschira Stiftung)				275,0	7,7		541,0	18,7	
	friends of Obewolfach/Oberwolfach Foundation	68,0	1,9		68,0	1,9		43,0	1,5	
	other donations	10,0	0,3		82,0	2,3				
	Federal Employment Agency	4,0	0,1		8,0	0,2		10,0	0,3	
	L-Bank Baden Württemberg (thermal insulation)	26,0	0,7							
	Budget	3554,0	100,0		3582	100,0		2897	100,0	
Expenditure										
	Total sum	3563			3320			2899		
5.1	Personnel	1040			986			1005		
5.2	Costs for materials	1444			1583			1319		
5.3	Construction work ⁶	898			537			0		
5.4	Other investments ⁷	85			72			33		
5.5	Off-the-line items (Sonderposten)	96			142			542		
5.6	Allocation to reserves etc.	0			0			0		
5.7	Funding managed by project partners									
	Memo item: "DFG-Abgabe" (German Research Foundation contribution)	0			0			0		

¹ Data for the report period, not including items in transit, etc.

² Actual available resources, i.e. without German Research Foundation contribution (*DFG-Abgabe*), incl. transferable unspent budget balances, etc.; on the basis of the implementation agreement for research institutions (AV-WGL)

³ Institutional funding not covered by the joint research funding from the German Government and the German States (*Länder*)

⁴ Incl. third-party funding managed by project partners (e. g. universities) but spent on the institute

⁵ Proportion (in %) of third-party funding for research promotion

⁶ Construction investments, multi-year construction maintenance work, land acquisition incl. vacating (*Freimachung*)

⁷ Large equipment

Appendix 4

Employees¹

– As **full-time equivalents** (FTE) and **in persons**; financed by basic institutional and third-party funding; as of reference day 31.12.2008

	Total	FTE		Total	Persons Financed from basic institutional funding, with limited employ- ment contracts		Women		With temporary contracts
		Number	%		Number	%	Number	% ²	
Total	22,00	0,0	0,0	28,0	0,0	0,0	0,0	0,0	0,0
1. Academic and management staff									
Salary acc. to									
- B4 and above; C4, W3									
- B2, B3, C3, W2									
- I / EG 15Ü									
- Ia / EG 15	1,00	0,0		1,0	0,0		0,0		0,0
- Ib / EG 14	2,00	0,0		2,0	0,0		0,0		0,0
- IIa / EG 13									
2. Other staff									
- Administration	4,75			7,0					
- Library	1,50			2,0					
- IT and statistics									
- Laboratory									
- Technology									
- In-house services	11,75			15,0					
- Vocational trainees	1,00			1,0					

¹ Employment acc. to BAT, TVöD for persons who are financed from institution resources (incl. vocational trainees)

² In relation to the number of women in the given category

Appendix 5**Documents Submitted by MFO**

- Evaluation report of MFO according to the Evaluation Questionnaire for Institutions of the Leibniz-Gemeinschaft
- Annual report 2007, Programme Budget 2010
- List of activities 2005 – 2008 (workshops, mini-workshops, AGs, seminars, training weeks)
- Organisation Chart of MFO (as of December 2008)
- Statute of MFO and GMF
- List of members of the Scientific Advisory Board and Reports by the Scientific Advisory Board
- Overview of revenue and expenditure, overview of third-party funding and other revenues (both 2006 – 2008), list of third-party funded research projects
- Overview of MFO employees (as of reference day 31.12.2008)
- List of guest researchers 2005 - 2008 (workshops, mini-workshops, AG), List of RiP groups 2005 – 2008, List OWLF and external guest researchers 2007-2008
- List of Publications in Oberwolfach Reports (OWR) 2004 – 2008, Publications of Oberwolfach Seminars until 2009, Publications in Oberwolfach Preprints (OWP) 2007 - 2008, Publications of RiP groups 2005 - 2008
- List of press releases on the MFO

Annex B: Evaluation Report

Mathematisches Forschungsinstitut Oberwolfach (MFO) Oberwolfach

Contents

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Enclosure: Members of the Evaluation Group and Guests

List of Abbreviations

DFG	German Research Foundation, Bonn
EU	European Union
MFO	Mathematisches Forschungsinstitut Oberwolfach
OWGS	Oberwolfach Leibniz Graduate Students
OWLF	Oberwolfach Leibniz Fellows
GMF	Society for Mathematical Research e.V.
SAW	Leibniz Senate Competition Committee
PW	Person weeks

1. Summary: Evaluation and Significance of the Institute and Main Recommendations

The Mathematisches Forschungsinstitut Oberwolfach (MFO) is extremely successful in its role of creating an extraordinary scientific infrastructure in the field of international mathematics. The MFO's core activity is to run an extensive scientific programme of differently structured workshops which forms the foundation of the institute's international reputation and visibility. As a conference and research establishment, the MFO offers scientists the opportunity to run scientific workshops in different programmes and to participate in the whole range of events and extended visits available at the MFO.

The MFO has expanded and developed its programme portfolio vigorously in recent years. It conducts its scientific programme at the highest international level. The institute uses a structured process for deciding on the range of individual events and supports the leaders in the planning, execution and organisation. In close cooperation with the institute's management, the MFO's Scientific Committee ensures the coherence and originality of the institute's convincing overall scientific programme, the results of which are presented in the MFO's own publication series. The management and Committee function excellently and are supported very well by the MFO's administration. The Scientific Advisory Board supervises this work exceptionally well.

The MFO provides an excellent infrastructure with conference rooms, guest house and bungalows, and a mathematical library with a worldwide reputation. The IT-service is on a high level. The MFO places high value on the promotion of junior scientists through measures ranging from project orientated research visits to active integration into the Workshop Research Programme. In recent years, the institute has been remarkably successful at utilising opportunities to obtain competitive third-party funding, in particular for programmes promoting junior researchers.

The MFO was founded in 1944 and, since 2005, has been funded on the recommendation of the Wissenschaftsrat (Science Council) by the German Federal Government (*Bund*) and the Federal States (*Länder*) as an establishment performing predominantly tasks of scientific infrastructure. Already in its last evaluation report on the institute in 1999/2000, the Wissenschaftsrat attested the MFO an extraordinarily high quality. The MFO has maintained and built on this level of quality impressively. The few recommendations the Wissenschaftsrat did make were implemented wisely.

Particular attention should be paid to the following recommendations in the evaluation report:

1. The MFO is extremely successful at selecting topical and relevant mathematical research themes for scientific events. Independent of this, the MFO should consider opening up further within the framework of its established programme portfolio and thus promote multidisciplinary collaboration between different parts of mathematics and – in relevant cases – to bridge the gap to other disciplines to an even larger degree.
2. In contrast to current practice, the MFO is encouraged to publicise its portfolio of scientific programmes to a greater extent by means of targeted calls for applications also directed at circles outside the established mathematics community and thus exploit still further existing user potential.
3. Documentation on programme execution, e.g. with regard to scientific qualifications or frequency of involvement in MFO programmes, should be developed. The MFO should utilise

this type of information in a targeted way to steer its programmes and in order to avoid recurrences.

4. As a general rule, the MFO's policy is that *Oberwolfach Leibniz Fellows* should stay at the MFO for a maximum of three months, and this is welcomed. The institute should strengthen its efforts to ensure that fellows participate in parallel events during their stay at the MFO. In this programme, competition for the available places should be increased yet further by appropriate measures. Due to its strategic significance within the internationally focused promotion of junior scientists at the MFO, the institute should perpetuate this programme. So far it has been financed by third-party funding, but it has a very convincing basic structure which means it should be permanently rooted in the institute's budget.
5. The MFO is encouraged to extend public access to the research results produced at the institute and to strengthen further the appropriate indexing of these results.
6. For the stabilisation of the institute's IT-infrastructure the MFO should implement a data security concept and also improve the spatial as well as the conceptual backup adequately on a medium-term. Moreover the MFO is recommended to implement a cooperative data backup with a neighbouring institution (e.g. university).
7. The Scientific Committee's membership is limited to four years, with the option of being re-appointed once. The Committee co-opts new members to reconstitute itself and is appointed by the Board of the GMF. Members of the Scientific Committee have the right of proposal. In addition, the MFO is expected to request further proposals for membership from other organisations and institutions, wherever possible from abroad or from international associations.
8. It is necessary to plan for the employment of a further scientific assistant at the MFO. This is a response to the large increase in the workload, particularly in the areas of public outreach and knowledge transfer (exhibitions, museum work), the administration and development of the extended programme portfolio (Oberwolfach Leibniz Fellows, Oberwolfach Graduate Students), as well as the editorial supervision of the print series which have been newly created at Oberwolfach, for instance the Preprints. To cope with the increased tasks (library extension and additional rooms in the bungalows) a further member of staff should be provided in the domestic service area.
9. At the end of his normal term of office this year, the present Director is taking up a senior professorship which, according to the current planning of the Federal State of Rhineland-Palatinate, is due to last until 2012. The propositions by the Scientific Advisory Board to refill the post of Director are convincing. In contrast to the past, the new Director should not only have a secondary appointment at the MFO for up to 20% of his time. Rather, in view of the increased workload in recent years, it will be necessary to increase the Director's activity at the MFO to 50%. The post could be filled, as in the past, by releasing a scientist from a neighbouring (in the broadest sense) university to work at the MFO. However, the MFO should also consider the path of making a joint appointment with a neighbouring university willing to collaborate at home or abroad. Implementation of the new structure for the position of Director should be undertaken and resolved as rapidly as possible. In a second stage, the post of Director can then be filled. With accompanying measures the MFO should ensure that these processes are immediately addressed and are completed in time by the end of the present Director's extended term of office in 2012. Irrespective of the new structure for

the position of Director, a 20% secondary appointment for the post of Deputy Director will still be necessary in future.

2. Mission and Main Work Programmes

The Mathematisches Forschungsinstitut Oberwolfach (MFO) pursues the task of providing an extraordinary scientific infrastructure for the international field of mathematics with outstanding success. It sees its main task in the promotion of basic research in pure and applied mathematics. To this end, the MFO's core activity is to conduct an extensive scientific programme of differently structured workshops. This scientific programme is the foundation of the institute's international reputation and visibility. As a conference and research establishment, the MFO offers scientists the opportunity to run scientific workshops in different programmes and to participate in the whole range of events and extended visits offered at the institute.

To a large extent, advances in mathematics are made in immediate verbal discourse. The scientific events at the MFO are thus an integral part of the research process in mathematics and do not present just a presentation of previously determined results. Through its programme structure, the MFO promotes the close linkage between scientists from university and non-university institutes. By facilitating direct exchanges between researchers, picking up on new developments within the specialist community of mathematics and initiating basic research, the MFO also actively participates in the continuing development of the specialist culture of mathematics. These tasks cannot be conducted within a university in the same way as they are at the MFO.

Since 2005, the MFO has been funded by the German Federal Government (*Bund*) and the Federal States (*Länder*) as an establishment performing predominantly tasks of scientific infrastructure. Already in its last evaluation report, the Wissenschaftsrat attested the MFO an extraordinarily high quality. One of the indicators for the MFO's high performance is the fact that the selection of applications and the design of the programmes are highly regarded by the international mathematics community.

One fundamental reason for the MFO's success with regard to events, visits of small-scale working groups and junior scientists is its mathematical library which counts amongst the world's best. It constitutes its fundamental working medium and is accessible to all participants at all times. Currently, the library holds 45,000 books, 3,000 online journals and 510 regularly subscribed journals as well as a collection of approximately 3,500 dissertations. An extension to the library was opened in 2007, financed by the Tschira and Volkswagen Foundations. Since the last evaluation by the Wissenschaftsrat, a steady increase in library stock has been secured through third-party funds (including DFG).

On the programme portfolio of the MFO:

The MFO has significantly extended and developed its programme portfolio in recent years. It operates its scientific programme at the highest international level. In total, approximately 2,800 researchers participate annually, 30% from Germany, 40% from other European countries and 30% from outside Europe. With consistently high numbers of candidates, the rejection quota is approximately 50%.

The MFO rightly sees its core activities in the Workshop Research Programme (2,000 participants annually). Forty week-long workshops are run per year, organised by two to four leading experts from relevant specialist areas. In each case, one organiser must come from abroad. Participation is on recommendation of the organiser and by personal invitation of the Director. It is principally with this programme that the MFO is associated worldwide; internationally it is regarded as a model for comparable programmes. Smaller programmes such as the *Research in Pairs* Programme (RiP – 240 participants annually), run since 1995, the Mini Workshops (200 participants), which have been taking place since 2001, and the well-established *Oberwolfach Arbeitsgemeinschaften* (100 participants annually) complete the portfolio of scientific programmes very convincingly.

One eminently positive aspect is the way in which the MFO specifically addresses the particular needs of junior scientists. As early as 1995, the Oberwolfach Seminars (150 participants annually) established a programme through which junior scientists could be familiarised with topical developments in mathematics. Efforts to promote junior scientists were strengthened further with two programmes approved through the SAW process (proposals of Leibniz institutes for competition within the framework of the Joint Initiative for Research and Innovation). *The Oberwolfach Leibniz Fellows* Programme (OWLF – 100 person weeks annually, corresponding to approx. 8 – 12 fellows) enables outstanding post-doctoral researchers to visit the MFO for several months. During their stay, fellows pursue an independent research proposal to which they can invite guests and co-workers. As a general rule, the MFO's policy is that *Oberwolfach Leibniz Fellows* should stay at the MFO for a maximum of three months, and this is welcomed. The institute should strengthen its efforts to ensure that fellows participate in parallel events during their stay at the MFO. In this programme, competition for the available places should be increased yet further by appropriate measures. Due to its strategic significance within the internationally focused promotion of junior scientists at the MFO, the institute should perpetuate this programme. So far it has been financed by third-party funding, but it has a very convincing basic structure which means it should be permanently rooted in the institute's budget.

Since the beginning of 2009, the MFO has an additional tool at its disposal for promoting doctoral candidates: the *Oberwolfach Leibniz Graduate Students* Programme (OWGS – 200 participants annually). The programme constitutes a valuable addition to the existing programme portfolio and facilitates participation in the Workshop Research Programme. Moreover, with the support of the *US National Science Foundation* (max. 92 participants annually, *US Junior Oberwolfach Fellows*) and the *Japanese Association for Mathematical Sociology* (20 participants annually, *Heizaemon Honda Scholars*), the MFO awards a significant proportion of workshop places to junior scientists from these countries.

The existing programme structures and the selection process have proved positive. The management, led by the Director, processes incoming applications. In this, it is supported by the votes of individual members of the Scientific Committee in the different programmes. On this basis, the Scientific Committee makes decisions on the applications as an umbrella committee. In so doing, it considers the scientific quality and the respective focus of the individual programme (workshop, fellows' programme, etc.). The management supports those organising and participating in the programmes in implementing approved work proposals. The collaboration between the Scientific Committee and MFO management on the one hand and the cooperation between the MFO and the organisers and other guests on the other function well. This was substantiated in conversations with members of the Scientific Committee and with randomly selected guests (events organisers, other participants, and fellows).

The MFO is extremely successful at selecting topical and relevant mathematical research themes for scientific events. Independent of this, the MFO should consider opening up further within the framework of its established programme portfolio and thus promote multidisciplinary collaboration between different parts of mathematics and – in relevant cases – to bridge the gap to other disciplines to an even larger degree.

This also includes the active recruitment of new participants. In contrast to current practice, the MFO is encouraged to publicise its portfolio of scientific programmes to a greater extent by means of targeted calls for applications also directed at circles outside the established mathematics community and thus exploit still further existing user potential.

Documentation on programme execution, e.g. with regard to scientific qualifications or frequency of involvement in MFO programmes, should be developed. The MFO should utilise this type of information in a targeted way to steer its programmes and in order to avoid recurrences.

3. Work Results

The core work results of the institute are the design and execution of an internationally highly respected programme of different events. Creating an intensive working atmosphere leads to results which are published by researchers in the context of their later work. The MFO's management is outstandingly successful at allowing organisers sufficient freedom in the design of the events whilst simultaneously supporting them in the best possible way with regard to content. The logistical support of guests by the administration and domestic service management is outstanding.

Since the last evaluation by the Wissenschaftsrat, the MFO's efforts to communicate the discussions and results of events to a broad specialist public have been noticeably intensified. The institute has an efficient strategy for rapid communication with the mathematical community. The MFO's knowledge transfer is considered to be very good and should be strengthened further.

The MFO has several publication series in which to publish work results achieved at the institute. In this way each programme in the workshop portfolio is linked to a specific series. Since 2004, the *Oberwolfach Reports* have covered the results of the workshops, Mini Workshops and Arbeitsgemeinschaften and encompass more than 3,000 pages annually. They consist of two to three-page extended abstracts of presentations held in the context of the workshop programmes. The *Oberwolfach Reports* are an appropriate form of publishing the latest mathematical research results and reflect the MFO's working method. Contrary to conventional conference proceedings which are usually arranged thematically, the contributions brought together in the *Oberwolfach Reports* are not aimed at presenting finished research results, but describe the beginnings of mathematical basic research in a nutshell. In addition, results ensuing from the *Research in Pairs* and the *Oberwolfach Leibniz Fellows* programmes can be published in a Preprint series. Lectures given at the Oberwolfach Seminars are published in a series of the same name by Birkhäuser publishing, Ltd.

A greater degree of knowledge transfer takes place via the MFO's website. The majority of publications are available here which has markedly increased the visibility and accessibility of work results achieved at the MFO. Indeed, there are approximately 10,000 hits per month on individual contributions in the *Oberwolfach Reports*. The MFO is encouraged to extend public

access to the research results produced at the institute and to strengthen further the appropriate indexing of these results.

Apart from conventional publications, the MFO has been able to establish its reputation successfully in other areas of mathematical knowledge and data transfer. A photo collection, for example, which has been in existence since 1950, was integrated contractually into the online encyclopaedia Wikipedia in 2008. Since 2008, too, DFG funding has allowed the institute's valuable historical documents to be digitalised and annotated in the *Oberwolfach Digital Archive*. Furthermore, the MFO continues to build up a collection of mathematical programmes on its database *Oberwolfach References on Mathematical Software*. In this context, the MFO's efforts to effect appropriate and sustainable data protection are supported.

In agreement with the Ministry for Culture, Youth and Sport in Baden-Württemberg, every two years, the MFO organises exemplary further training events for teachers of mathematics, offering workshops tailored to their specific requirements. In alternate years, the MFO organises further training courses for librarians, planned and run in collaboration with Konstanz University Library. In addition, the MFO holds an annual preparatory course for participants in the International Mathematical Olympiad. These events complement the MFO's core programme very convincingly and should be continued.

"The Year of Mathematics 2008" brought about a considerable extension and intensification of the MFO's public outreach. With more than 200,000 visitors, an exhibition held in this context (*Imaginary*) was an overwhelming success. A permanent exhibition is presently being designed in cooperation with a local museum. The MFO is also considering closer collaboration with larger museums. These activities are notable. However, in view of its limited staffing capacity, the MFO must keep sight of how strongly its efforts in the area of public outreach can be developed whilst not neglecting the institute's core activities.

4. Promotion of Junior Academics

The promotion of junior academics is rated very highly at the MFO. It ranges from project-oriented research visits to integration into the Workshop Research Programme. As well as the Oberwolfach Seminars and the Mini Workshops, the *Oberwolfach Leibniz Fellows* and *Oberwolfach Graduate Students* programmes are particularly noteworthy in this respect as they enable outstanding junior researchers to stay at Oberwolfach at different points in their careers. In addition, depending on the availability of third-party funding, the MFO supports up to three hundred junior researchers annually. To this end, the MFO also awards the Oberwolfach Prize and, since 2005, the John Todd Fellowship in collaboration with the Oberwolfach Foundation.

As a direct result of the programme areas tailored to junior researchers, there has been a gratifying increase in the number of doctoral candidates and post-doctoral scientists participating in the MFO's scientific programme in recent years. Including the *Oberwolfach Graduate Students* programme, which was introduced in 2009, a total of approximately 20% of all places are now available to junior academics. However, as well as securing the future of programmes which have hitherto been third-party funded, a further increase in programme-specific competitiveness is desirable. A more proactive attitude to publicising the programmes is recommended in this respect.

The MFO's efforts to address female researchers within the framework of calls for programme proposals are welcomed. In recent years, between 12.5% and 15.4% of participants in scientific

programmes were female. In this respect the MFO attaches great importance to the existing programmes for junior academics which, in the past, have proved very effective in enabling female junior academics to participate in a research visit to Oberwolfach. By means of funding through the European Marie Curie Programme alone, the MFO was successful in increasing the percentage of female participants to 21%. The MFO is encouraged to extend its efforts to increase still further the percentage of female academics participating in the various programmes.

5. Cooperation

As a conference and research establishment, the MFO provides the institutional framework for scientific cooperation. It is very successful at facilitating fruitful cooperation between mathematicians in an atmosphere described by participants from home and abroad as extremely stimulating.

The MFO maintains collaborative relations on an institutional basis with the University of Kaiserslautern at which the present Director is a professor. It also fosters the relevant partnerships in the context of its important third-party fundraising and the promotion of junior academics. As a member of the *European Post-Doctoral Institute* (EPDI), the MFO forges links between its own efforts to promote junior academics and a European network. In general, this looks very promising and is welcomed. The institute is networked at European level as a member of the *European Research Centres on Mathematics* (ERCOM).

It should be emphasised that the MFO has served as an institutional model for comparable establishments inside and outside Europe. For the purpose, amongst other things, of coordinating the scientific programme, the MFO maintains close collaborative relations with these institutes, e.g. the *Centre International de Rencontres Mathématiques* (CIRM) in Luminy (France), established in 1979, and the *Banff International Research Station* (BIRS), founded in Banff (Canada) in 2003.

In addition, the institute's library works closely with leading scientific publishing houses. An indicator of the high esteem in which the MFO is held and its function as a significant multiplier in the field of mathematics is the fact that the publishing houses grant the MFO copies of new publications free of charge.

6. Institute Structure and Personnel

The MFO is led by the management, strongly supported by the Scientific Committee. The MFO's management consists of a Director appointed for a fixed term and his Deputy. Both are university professors, the Director at a German university; his Deputy at a university abroad. They carry out their work at the MFO as secondary appointments and fulfil them with great commitment. The present Director leads the MFO excellently. He has further developed the programme portfolio and public outreach in a decisive way. His engagement has significantly shaped the structural and specialist character of the MFO. The Deputy Director is also intensely and successfully committed to the MFO. The management is supported by an administrative assistant and receives additional support from an external scientific assistant. The majority of staff is employed in the area of domestic service (11.75 posts), administration (4.75 posts), the library (1.5 posts) and IT (2 posts). The work of these service areas is professional and very good.

In close cooperation with the Scientific Committee, which is responsible for research and development planning, current scientific programme scheduling as well as decisions on promoting events, the institute's management leads the MFO and designs the portfolio of scientific programmes. This cooperation functions extremely well and ensures both the quality and coherence of the events at Oberwolfach. The Scientific Committee currently encompasses 22 members, 13 from Germany and nine from other European countries, including one Fields Medallist (corresponds to Nobel Prize) and six Leibniz Award Winners. As suggested by the Wissenschaftsrat in its recommendations, membership has been limited to four years with the option of being re-appointed once. The Scientific Committee co-opts new members to reconstitute itself and is appointed by the Board of the GMF. Members of the Scientific Committee have the right of proposal. In addition, the MFO is expected to request further proposals for membership from other organisations and institutions, wherever possible from abroad or from international associations.

Since 2005, the MFO has had a Scientific Advisory Board as an autonomous, external advisory committee. The Advisory Board, which has an equally high-ranking membership (seven members, including one Fields Medallist and two Leibniz Award Winners) is very committed, supports the institute with all the means at its disposal and plays a part in institutional quality management in the context of regular audits. Recently, the Scientific Advisory Board, in consultation with the other committees, developed a proposal regarding adjustments considered necessary to the scientific management structure.

The range of tasks undertaken by the institute's leadership has increased notably in recent years and, measured against this, the staffing situation at the MFO is unsatisfactory. The present staff is only able to manage these tasks to a certain extent. It is necessary to plan for the employment of a further scientific assistant at the MFO. This is a response to the large increase in the workload particularly in the areas of public outreach and knowledge transfer (exhibitions, museum work), the administration and development of the extended programme portfolio (Oberwolfach Leibniz Fellows, Oberwolfach Graduate Students), as well as the editorial supervision of the print series which have been newly created at Oberwolfach, for instance the Pre-prints. To cope with the increased tasks (library extension and additional rooms in the bungalows) a further member of staff should be provided in the domestic service area.

At the end of his normal term of office this year, the present Director is taking up a senior professorship which, according to the current planning of the Federal State of Rhineland-Palatinate, is due to last until 2012. Against this backdrop and in view of the huge increase in the demands made on the MFO's Director in recent years, the Scientific Advisory Board has proposed an extremely convincing concept for restructuring this position. The Director should continue to have a simultaneous university appointment in the future, too. Appointing a scientifically widely proven and active university professor to the leadership position ensures that the MFO stays in close touch with the current research discourse. However, in contrast to the past, the new Director should not only have a secondary appointment at the MFO for up to 20% of his time. Rather, in view of the increased workload in recent years, it will be necessary to increase the Director's activity at the MFO to 50%. The post could be filled, as in the past, by releasing a scientist from a neighbouring (in the broadest sense) university to work at the MFO. However, the MFO should also consider the path of making a joint appointment with a neighbouring university willing to collaborate at home or abroad. Implementation of the new structure for the position of Director should be undertaken and resolved as rapidly as possible. In a second stage, the post of Director can then be filled. With accompanying measures the MFO should ensure that these

processes are immediately addressed and are completed in time by the end of the present Director's extended term of office in 2012. Irrespective of the new structure for the position of Director, a 20% secondary appointment for the post of Deputy Director will still be necessary in future.

7. Facilities and Budget

The MFO offers the best possible working conditions in an international environment. To this end, guests are provided with an excellent infrastructure comprising conference rooms, guest-rooms and bungalows, and a mathematical library with a worldwide reputation. The IT-service is on a high level. In recent years it has been possible to extend and refurbish these facilities generously with financial support from the German government and, in particular, from the Federal State of Baden-Württemberg (guesthouse, bungalows) and from private foundations (e.g. library). Additional funding secures the continuous upgrading of the research library. For the stabilisation of the institute's IT-infrastructure the MFO should implement a data security concept and also improve the spatial as well as the conceptual backup adequately on a medium-term. Moreover the MFO is recommended to implement a cooperative data backup with a neighbouring institution (e.g. university). The cost-performance analysis and the programme budget are utilised convincingly.

Given the specific character of the MFO, which organises the research process but does not of itself carry out research, third-party funding in recent years has been unexpectedly and remarkably high (2008: 13.5%). Financial contributions from private foundations and EU funding are of particular importance here. In this way it has been possible to secure the running of the Oberwolfach Seminars until 2013 through long-term support from the Siemens Foundation. In 2005-2007, a total of 1,200 junior researchers were financed through the European Marie Curie Programme. A further welcome development has been the funding raised through the *US National Science Foundation* and the *Japanese Association for Mathematical Sociology* to promote junior academics from these countries. The MFO's efforts to enable researchers from geographically distant regions (e.g. Africa, South America) to participate in the scientific programme at the MFO by means of travel grants should be intensified.

The MFO is urged to continue its efforts to raise third-party funding. In doing so it should not lose sight of the need to secure permanent funding for the MFO's programmes. For example, although the possibility to apply for funding from the Marie Curie Programme has come to an end, it is still important to keep financing visits by junior researchers from abroad. It is also important to find permanent financing for other programmes which have been third-party funded in the past. At least the programmes approved through the competitive SAW process (e.g. *Oberwolfach Leibniz Fellows*, see above) should be permanently anchored in the institute's budget.

8. Implementation of the Recommendations by the Last Evaluation Committee

In its statement of January 2000, the Wissenschaftsrat (Science Council) certified the MFO as an establishment of extraordinarily high quality. The Wissenschaftsrat advised that the Scientific Committee (formerly called Advisory Board), as the principal organ of the Society for Mathematical Research (Gesellschaft für Mathematische Forschung e. V. - GMF), be re-appointed at regular intervals and that the length of membership be limited to two terms of office of four years each. Pursuant to this, the statutes of the society were amended. Moreover, the MFO rightly

went beyond the recommendation of the Wissenschaftsrat and separated the work of programme control by the Scientific Committee from that of critical supervision by the present Scientific Advisory Board. The institute has taken up the Wissenschaftsrat's suggestion to make efforts, where suitable, to find collaborative partners in the business world in an appropriate way.

Enclosure

Members of the Evaluation Group and Guests

1. Evaluation Group

Chairman (Member of the Senate Evaluation Committee)

Prof. Dr. Wolfgang E. **Nagel** Institute for Computer Engineering, Technische Universität Dresden, TUD

Vice Chairman (Member of the Senate Evaluation Committee)

Prof. Dr. Günter **Weimann** Fraunhofer Institute for Applied Solid State Physics IAF, Freiberg (retired)

External Experts

Prof. Dr. Sergio **Albeverio** Department for Probability and Statistics, University of Bonn

Prof. Dr. Hans-Joachim **Bungartz** Department of Informatics, Technische Universität München, TUM, Munich

Prof. Laurent **Guillopé**, PhD Département de mathématiques, Université de Nantes, France

Prof. Dr. Rolf **Jeltsch** Seminar for Applied Mathematics, Swiss Federal Institute of Technology, Zurich (ETH Zurich), Switzerland

Prof. Jan Karel **Lenstra**, PhD CWI – Centrum Wiskunde & Informatica, Amsterdam, The Netherlands

Prof. Dr. Claus Michael **Ringel** Faculty of Mathematics, Bielefeld University

Prof. Dr. Norbert **Schappacher** U.F.R. de Mathématique et d'Informatique, Université Louis Pasteur de Strasbourg, France

Prof. emeritus Philippe **Tondeur**, PhD Department of Mathematics, University of Illinois at Urbana-Champaign, USA

Prof. Sir David **Wallace**, PhD Isaac Newton Institute for Mathematical Sciences, University of Cambridge, United Kingdom

Federal Representative

ORR Dr. Volker **Fürst** Federal Ministry of Education and Research, Bonn

Representative of the Federal States

MinDirig Jörg **Geiger** Saxon State Ministry of Sciences and Arts, Dresden

2. Guests

Representative of the relevant Federal Department

Dr. Werner **Salz** Federal Ministry of Education and Research, Bonn

Representative of the relevant State Department

RegDir'in Tania **Bolius** Ministry of Sciences, Research and Arts of Baden-Württemberg

Representative of the Office of the Joint Science Conference, Bonn
excused

Representative of the Leibniz Association

Prof. Dr. Matthias **Steinmetz** Astrophysical Institute Potsdam, AIP

Representative of the Scientific Advisory Board

Prof. Dr. Stefan **Müller** Hausdorff Center for Mathematics & Institute of Applied Mathematics, Bonn

Annex C: Statement of the Institution on the Evaluation Report

**Mathematisches Forschungsinstitut Oberwolfach (MFO)
Oberwolfach**

The MFO likes to thank the Evaluation Committee for its work and constructive recommendations. The report will encourage the Institute to continue its scientific work at the highest international level. We are pleased that the committee sees the recent development of the programme portfolio of the MFO very positively, in particular the activities for promotion of junior scientists.

We shall consider the recommendations made by the Evaluation Committee very carefully in order to find suitable ways of realization. A few comments concerning these recommendations might be appropriate.

The MFO started already to publicise its scientific programmes to a greater extent by creating a biannual electronic newsletter with more than 7000 recipients all over the world. Actions for the stabilisation of the institute's IT-infrastructure have recently been implemented.

We are pleased that the work by the Scientific Advisory Board and the Scientific Committee as independent groups of experts was highly appreciated by the Evaluation Committee, as the commitment of these international experts is one of the secrets of the Institute's success. It is in the interest of the Institute to further internationalize the Scientific Committee and to recruit high-profile mathematicians to take part in this voluntary service.

A new management structure of the MFO has been developed and proposed by the Scientific Advisory Board. The Institute is grateful that the Evaluation Committee strongly supports this proposal which should be implemented in time before appointment of a new Director and Deputy Director.